



April 1991

Vol. 4 N° 7

Price £2.00

Archive

The Subscription Magazine for Archimedes Users



Simple Measurement & Control

ARM Assembler Utilities

Improving Audio Quality

More Notes on BBC Emulators

Reviews: Clip Art, Careware N° 10, Powerband, Return to Doom, Escape from Exeria, TwinWorld, File Handling for All, Capsoft Disc N° 1, Quest, DataKing & DataTrans, Citizen IFDD Drive, Technoscan II Upgrade.

The VATman strikes again

The main reason that this issue has followed the previous one so rapidly is that our beloved Chancellor of the Exchequer has increased the VAT rate from 15% to 17.5%. As a result, everyone like us, who quotes VAT inclusive prices, will have to change their adverts, price lists etc, etc!! This will also mean that some of the prices quoted in reviews and Products Available may not be correct. We'll try to check them if possible, but I hope you'll forgive us if we miss any.

Also, if you are ordering anything from us, please use the new Price List, not the old one, because the prices have increased by the extra VAT element. If you send a cheque which is too small to cover the cost of the goods you order, it will cause complications and delay, so PLEASE DESTROY ALL OLD PRICE LISTS. Thank you.

Another 'one-up' for Impression II

The very fact that I have been *able* to get this magazine out so soon after the previous one is another accolade for Impression. It just would not have been possible with PageMaker on the Mac. (By the way, I've not had any response yet from Beebug about whether they are going to use Ovation to prepare Risc User.)

All the Archive staff wish you a Very Happy Easter!

Paul B. et al.

Government Health Warning – Reading this could seriously affect your spiritual health.

Although this is likely to reach you after Easter, (I am writing before Easter) I would just like to ask you to find a little time over the next few days to think about the significance of the death and resurrection of Jesus.

To the outsider, Jesus' death looks like the defeat of a well-meaning teacher who upset the 'powers that be' and his resurrection looks like a blatant act of wishful thinking.

However, if you study it more deeply, you will find that the cross is the most wonderful point of triumph – not defeat. The powers of evil were smashed by that one loving act of self-sacrifice – and it's not just "an example for us to follow". It would be pretty pointless if that's all it was. No, there is a deep spiritual truth about the cross... which I haven't time to go into now, but it's described in, "The Lion, the Witch and the Wardrobe" by C.S. Lewis. On one level, it's a children's story, but at a deeper level, it's a very powerful allegory of the death and resurrection of Jesus. Read it and see what you think.

Archive

Volume 4 • Nº 7 • April 1991

Contents

Products Available	2	Draw Format Clip Art	39
Small Ad's	3	Graphics Libraries	39
Hints & Tips	5	Draw Format LineArt Nº 1	41
SCSI Column	9	Careware Nº 10	42
File Handling for All	12	Simple Measurement & Control	43
Capsoft Disc Nº 1	13	DataKing & DataTrans	46
PipeLine	15	TwinWorld	50
Improving Audio Quality	21	More Notes on BBC Emulators	51
Comment Column	23	Quest	55
Powerband	24	Citizen IFDD – a “Whoppy”?	57
Pineapple Digitiser	25	Technoscan II Upgrade	59
Return to Doom	27	Help!!!	60
Escape from Exeria	29	Help Offered	60
ARM Assembler Utilities	32	Fact-File	61
Tools Graphics Library	38		

Products Available

- **A540 fan quieteners** – Ray Maidstone has now designed fan quieteners for the A540 but they are unfortunately *not* user-fit devices. Contact Ray on 0603-407060 for more details.
- **ALPS Compression Disc** – Alpine Software have released a sprite compression utility which can compress mode 12 sprite down to something like 30% of their original size. Mode 15 sprites are compressed even more – some down to as low as 6% of their full size but, on average, around 25%. The application which is only available from Alpine Software is £19.95 inclusive (post free).
- **Atomwide high speed drives** – Atomwide are doing some new SCSI drives. The first is a high speed (17 ms) 48M Quantum Pro drive. The prices are £540 for an internal drive and £620 for an external drive. The other drive is the Connor 100M drive as supplied in the Acorn A540. These are also, we think, 17ms drives and are available for £740 (internal) or £840 (external). (More details in the SCSI Column on page 9.)
- **Atomwide removable drives** – Atomwide are also doing some 42M removable SCSI drives. They use exactly the same drive mechanism as the MicroNet drives and they work out a little cheaper. (But with the extra VAT, you're back to the number you first thought of!!) The prices are now £795 and £595 with and without Oak podule respectively, or £775 with Linguinity podule. (More details in the SCSI Column on page 9.)
- **Children's pictures** – Micro Studio have produced a new library pack of draw and paint files – over 150 in all – aimed at children. The new pack, at £19.95 inclusive, has pictures of animals, toys, people, shapes and objects and signs.
- **Colour screen conversion** – Human Computer Interface Ltd have produced a piece of software called Colour Screen»Mac which will convert colour & monochrome images between the Macintosh and the Archimedes or Windows 3.0 on the IBM PC. The cost is £95 plus £2.50 p&p +VAT. They also do an Archimedes to Mac connecting cable for £20 +VAT.
- **Concept Designer** from Longman Logotron enables the user to create and use overlays on a Concept Keyboard and even has an emulator so that you can develop software for use with a CK without having one attached to the computer. The price is £24 +VAT from Longman Logotron or £26 through Archive.
- **Diet Manager** – Yes, for the weight-conscious Archimedes owners, here is a multi-tasking application that will allow you to keep track of all those calories (and proteins and fats). This program from MEWsoft, priced £27.90 inclusive would also be useful in schools for health education.
- **Draw format lineart** – Southern Printers have produced the first of their lineart discs. The price of this first disc is just £5.50 inclusive. They are aiming to keep the price down to a level which should deter copying since lineart does tend to 'migrate' very easily from computer to computer! For more details, see the review on page 41.
- **!Draw Help** – After the success of Sherston Software's !Help companion to the Archimedes, they have now produced one for !Draw. This package consists of a 96 page tutorial book plus a disc full of clip art plus a !Draw quick reference card. The package is available for £15.95 (no VAT).
- **Fast array sorting routines** – Avisoft have produced a set of fast ARM code shell sort routines. Contact Martin Avison for more details. Address in Factfile.
- **First enhancement** – Serious Statistical Software have announced a new context sensitive online help system for their 'First' statistical software package. This upgrade is just £25 (no VAT). The cost of the full 'First' package is still £150.
- **Hawk V12 video framestore** is the latest product from Wild Vision. At £1990 +VAT (+£5 carriage) it provides a very powerful image processing and analysis system for the Archimedes. This double width podule can store up to four images, 512 x 512 in 256 grey levels.

• **PD library** – Westbourne Services have just started a PD library for the Archimedes. The discs are £1.50 each. Westbourne Services will supply a sample disc and catalogue for £1. (We mentioned this last month but lost the address. Sorry!)

• **Midnight Graphics Draw Clip Art** – Set one, six discs full for just £29.95 +VAT.

• **Taipei 2** – The first offering from Black Sheep Software is an updated version of the Mah Jong patience game, Taipei, released originally on Shareware N° 31. Black Sheep have responded to criticisms of the original version voiced in Micro User and Archimedes World and have added some extra features. The price is £9.95 inclusive from Black Sheep.

• **Viewpoints** – an interactive environment for the Archimedes from Sherston Software. Aimed at school children, it allows them to use a map and explore the village, seaside, surrounding countryside and even under water. As they wander, they can stop and see if there is anything of interest and can take snapshots of what they see. They can also zoom in and take a better look at things. Viewpoints contains all sorts of starting

points for various types of written and oral work and includes geography and mapping skills as well as information storage and retrieval skills. The Viewpoints Database is £35 +VAT from Sherston Software.

• **!VoiceBuilder** – MJD Software's multi-tasking RISC-OS application designed to work alongside Maestro, Rhapsody etc to create new voices. Libraries of waveforms and envelopes are provided and can be manipulated freely. The software, which is MIDI compatible, allows control of attack, looping, release phases etc. After creation, the modules can be immediately accessed from BASIC or other languages or from other applications.

Review software received...

We have received review copies of the following software and hardware: Carewares 4 and 6, !Voice-Builder from MJD Software, Longman Concept Designer, Design Concepts' Outline Fonts and Software disc, Taipei 2, Avisoft Fast Array Sorts, ASTE Syracuse disc magazine, PRES A3000 5¼" interface & software, Morley Teletext adaptor front end software. **A**

Small Ads

• **A3000 1Mb upgrade** (Morley expandable) £50, CC ROM/RAM podule £25, Archimedes SpellMaster ROM £30. Phone Mr H McDonald on 04243-4500.

• **A3000 Midi/user interface** £30, Acorn DTP £80, Rhapsody £30, Arcwriter £10, Acorn Umbrella £20, A3000 Carry-case £25. Contact Geoff Bailey on 04867-80632.

• **Armadillo Sound Sampler + MIDI**, 8 bit stereo, with HighNote control software, £115. Phone Rob Browning on 0242-231540.

• **Original software** – Lot 1, £15 = The Pawn, UIM, Presenter II, Startrader, Minotaur, Quazer. Lot 2, £25 = Interdictor II, Terramex, Repton 3, Arcade 3, Talisman, Zarch. Lot 3, £10 = EFF fonts Albert, Sophie and Tamsin. Phone John Crabtree on 0803-832505

• **Second Internal 3½"** disc drive, previously installed in an A310, £75 ono. Phone Mr C Dawson on 0253-700578 or 0283-36044.

• **Wanted** single drive fascia for A310, also MEMC1a chip. Phone Mr C Dawson on 0253-700578 or 0283-36044.

• **Wanted** single drive fascia for A310. Phone Bill Foyster on 0769-60289. Also 2nd 3½" drive for 310 £50.

Charity Sales – The following items are available for sale in aid of charity. PLEASE do not just send money – ring us on 0603-766592 to check if the items are still available. Thank you.

(If you have unwanted software or hardware for Archimedes computers, please send it in to us. If you have larger items where post would be expensive, just send us details of the item(s) and how the purchaser can get hold of them.)

User Guides £2 + £3 postage, Acorn 2-slot BP £15, Euclid £25, Arcwriter £5, Acorn ROM/RAM podule £18, CC ROM/RAM +128 RAM £40, Global View £4, Twin £10, Interdictor 1 £6, Superior Golf £9, Trivial Pursuit £9. **A**

Base 5

Base5 DBMS

Base5 DBMS is a suite of BASIC V functions and procedures designed to implement database programs. It is fully compatible with RiscBASIC and ABC compilers.

- ◆ Fully compatible with RISC OS
- ◆ User configurable
- ◆ Compatible with both Basic compilers
- ◆ Extensive search features
- ◆ Multiple databases in use simultaneously with easy communication between them
- ◆ Rigorous in-built error checking
- ◆ Comprehensive documentation of tutorial material, language reference and file format
- ◆ Numerous example databases and programs supplied
- ◆ Extensive import and export features
- ◆ A separate library of mathematical, statistical and calendar functions
- ◆ A fully multi-tasking database application !WimpBase5 as a get-you-started entry point

Base5 DBMS is available now for **£69** (no VAT). Site licences available.
Demonstration disc for **£5**, refundable on purchase of full system.

PairData

First of an increasing number of fully compatible products for use with Base5 DBMS.

- ◆ A BASIC V library for the creation and processing of coordinate pair data
- ◆ !MouseIn, a fully multi-tasking application to write scaled pointer coordinates directly into user designated fields
- ◆ Replace, count, delete or recall records meeting distance criteria
- ◆ Centre of Gravity, mean distances, nearest point calculations etc.
- ◆ Requires Base5 DBMS

Base5 PairData costs **£22.50** (no VAT) (£18 for Registered Users)

Direct from:

Base5
P.O. Box 378
WOKING
Surrey GU21 4DF

Introductory Offer

Base5 DBMS plus PairData for
£89 (no VAT)

Hints and Tips

• **Ballarena** – I would advise using the mouse to control your 'bat' because the keyboard is not very responsive. Also, note that the 'Auto' bat does not always respond fast enough to catch the ball, and there is nothing you can do about it! I was very disappointed in the final message which just congratulates you, and ends your game. The passwords are: PUNKANDJUMP, MONTPELLIER, SEA SEX SUN, VL 86 C 010, MOUNTAINEERS, GRENOUILLE, BLUBEDILOMAR, BRAIN KILLER, RHYTHM BOX, BOUBOULOID, MENFOU, 32 BIT POWER, MARTINI, SEE YOU SOON, ETERNA. Mike Gregory (& Russell Lamb).

• **Changing !Edit's default file types** – Answering my own Help!!! plea in Archive here's how to change the default filetypes for !Edit:

```
*DIR ADFS::4.$ .RISC-OS.!Edit
                                (or your path here)

*GOS
*L. !RUNIMAGE 8000
*BREAKSET 8004
*GO 8000
*SAVE "!RUNIMAGE" 8000+1F2C0
                                8008 8000

*BASIC
*L. !RUNIMAGE 8F00
$&1B208="ReadMe" These can be changed
$&1B214="DataFile" to suit your needs
$&1B220="ExecFile" with any string up
$&1B22C="EditFile" to 10chars in
$&1B238="!Run" length.
*SAVE !RUNIMAGE 8F00+1F2C0 8008
                                8000
```

Rob Davison, Southland, New Zealand

• **'Cheapo' dialog boxes** – You can make use of Wimp_ReportError instead of writing code for a dialog box when programming wimps. The following code fragment is an example:

```
DEFPROCsave_file(name$)
IF FNfile_there(name$) THEN IF
    FNdialog("A file of that
        name exists. Overwrite
        it?")=FALSE THEN ENDPROC
```

```
REM save file
ENDPROC
```

```
DEFNdialog(str1$):!block%=1
                                :$(block%+4)=str1$
SYS"Wimp_ReportError",block%,
                                19,"Message from
                                applic" TO ,resp%
=resp%=1
```

where the string "Message From Application" is <20 characters in length.

The only disadvantages are that all other desktop activity is suspended, the machine beeps (if wimpflags bit 4 is not set) and that the user has to answer "OK" or "CANCEL" instead of the more logical "YES" or "NO". However, this saves a great deal of programming and can be very useful at times (This is why FWP2 stops printing – See Archive 3.10 p 25). Rob Davison, New Zealand.

• **Cleaning A310 keyboard contacts** – I recently had a very nasty intermittent fault on my A310. It began as a line of 22222222's being printed at the cursor, for no apparent reason. Also the '2' key of the numbers keypad wouldn't function occasionally. This was accompanied by a more worrying symptom where the screen display would suddenly go hay-wire and only occasionally would right itself after switching the machine off and then on.

Eventually, it was cured by cleaning the key-contact of the '2' (keypad) and on the basis of "If it works, don't fix it", I didn't clean any other keys. After having the machine checked at a local dealer (£17.50) and some discussion with Archives' Technical Help, it was assumed that the screen break-up was due to CMOS *Configuration settings somehow being changed to Monitor-Multisync, by the spurious keyboard input. The problem has not occurred since.

For anyone else with keyboard problems, here's how I cleaned mine: Lay the keyboard upside-down and remove all 8 screws under the keyboard base and gently lift off the base. Remove the 6 larger screws, securing the PCB to the

keyboard top-cover. Lift out the complete PCB and keys unit. The keytops are all secured in a frame which is, in turn, secured by 20-odd small screws from the PCB underside. Take them all out (and put them somewhere safe) and, keeping the whole kaboodle together with a firm grip, turn it over and set it down right-side up. The complete set of keys can now be lifted slowly off the PCB, exposing the rubber contact/covers. These are glued with a weak glue. I found that all the rubber bits stayed stuck to the PCB. I gently peeled away the rubber contact/cover at the offending key position and marvelled at how the dirt had managed to penetrate so far, considering that the cover was stuck down. The keyboard key contacts (A310) are just gold plated discs of PCB copper, easily cleaned with switch cleaner and a non-hairy paper-towel or cloth. If you have to blow away any bits, use a camera 'puffer brush'. If you have to use your mouth to blow away grit, crumbs etc, wait for any teeny drops of condensation to evaporate. Spit doesn't make a good contact cleaner and some spirit-based cleaners may tend to dissolve the pcb-surface varnish which will be smeared over the contacts' surface. Your local electronics hobby shop (e.g. Tandy) should have cans of switch-cleaner at £2 - £3 (which is a lot cheaper than £120 for a new keyboard(!) and well worth the extra effort of DIY).

D.P.Allen, Surrey

- **Data cartridges for tape streamers revisited** – Further to the hint in 3.6 p2, the metal variety of DAT can become unreliable after three or four writes and so it is better to use the non-metal variety e.g. Memorex tapes. Mr Chapman, London

- **RISC-OS printing hints** – Printing out with the RISC-OS printer drivers is very easy. However I found several areas which are not well explained and one or two things which are down right misleading!

- PRM pages 1526-1528 sprite plotting commands must be with reference to the address of the sprite not the name, so if you use

```
SYS "OS_SpriteOp",&122,
    spriteaddr%,"name",0
    ,xpos%,ypos%
```

then, when printing, the error "Sprite Not known" will be returned. The solution is to use &222 and an address instead of the sprite name. Addresses for a named sprite can be found with

```
SYS"OS_SpriteOp",&118
```

addr is in R2 on exit – see PRM page 406.

- PRM page 1532. Always use -1 (for current) as the destination mode with "ColourTrans_Select-Table" if you specify a mode (even the current one) ColourTrans will not set up the table correctly resulting in strange looking sprites on printout.

- When rendering Draw objects remember to decrease 'flatness' to a lower value. A useful way of calculating it is to divide the default (512) by the print resolution divided by 90 eg. flat=512/(printxres%/90) where printxres% might be 300 – as read from

```
SYS "PDriver_Info" TO,printxres%
```

printyres% the 90 comes from a normal approximately 90 dots per inch on screen. Rob Davison, Southland, New Zealand

- **Saving the CMOS RAM settings** – In recent editions of Archive (e.g. 4.3, p.10 and 4.5, p. 21) there have been repeated mentions of the problem which arises when a battery failure deletes all the information in the CMOS RAM.

There is one very simple way of solving this problem: On Careware N° 6 you will find the application !SysUtil by Jon Marten; one of the choices it offers is "Save Configuration"!

All you have to do is copy the Utility and the "ConfigFile" it produces to some disc where they are easily accessible – not the hard disk!

After the dreaded memory loss you simply load !SysUtil and drag the ConfigFile icon onto the !SysUtil icon and confirm that you want to change the configuration. Jochen Konietzko, Koeln, Germany

- **Shutdown of hard drives** – During the recent experience I have had due to the volume of hardware I've been setting up and testing, the following items have come to light.

MR45's seemed to be suffering from corruption but, when reformatted, the problem went away, so where did the corruption come from?

A little further investigation revealed that a verify scan caused the Closedown procedure of the drive not to occur.

It was found that, in order to close the drive down properly, a *bye and two *Shutdowns were required! At first, this was thought to only relate to MR45's but, in fact, it has been found that this is not so, and even my own machine (A440/1 with standard Acorn hardware) does similar things.

So, how do you know whether your hard drive is shut down properly? If an <f12> is followed by a *bye, a staccato blip from the drive LED should occur and a short sharp click noise should emit from the drive itself. This is *not* the closedown condition.

A *shutdown will now give a flickering performance from the drive LED and a multiple clicking from the drive lasting about half a second. This is the shutdown condition with the heads parked and isolated from the discs and closedown of the system can now occur. Ray Maidstone, Norwich.

• **!UIM Hack** update (cf Archive 3.10 p 9) – This utility allows you to edit characters in The 4th Dimension's U.I.M. game. It has now been updated and improved by the author, David Shepherdson, and has been put on this month's program disc.

Impression Hints and Tips

• **Beware thin lines** – It seems that Impression can't cope with the very thinnest lines that Draw can produce. It does not display them properly on the screen and sometimes doesn't print them properly. The answer is to use 1 mm lines instead. This came to light when Brian Cowan was using graphs generated by the graph plotting utility (on Shareware N° 31) which apparently uses these thin lines. (This has only been tested in version 2.05.)

• **Double-clicking** on a graphic opens the "alter graphic" window, (For those who don't read manuals.)

• **Help!** – Does anyone know how to create a new Master Page based on an existing master page? It's a real pain to have to change the margins every time you create a new master page. Why can't you have a new master page just slightly different from an existing one? The par-

ticular application was where I wanted to try two, three, four, five columns etc. for a document and every time I wanted to change the number of columns, I had to create a new master page, changing the margins from to the 5 mm I wanted before changing the number of columns and the inter-column gap. (Mind you, I did find one short-cut as a result of having to do this over and over again. If you click in the first margin box, you can use <ctrl-U> to remove the "12.7mm", then press <5> and then <down> will move you to the next box and you can repeat the <ctrl-U>, <5>, <down> for each box. This applies to most of the dialogue boxes – <down> moves you to the next box requiring input. Yes, I know it says this in the manual, but I didn't see it.)

Anyway, can I put my plea another way? Is there any way of editing a master page other than sliding the boxes around? Can you edit, by entering numbers, the sizes of the margins, for example?

• **Search & replace again** – We mentioned last month that, when doing a find and replace, <ctrl-N> finds the Next occurrence, <ctrl-R> does a Replace of the marked text. Be warned though that, if the find box is on-screen, <ctrl-A> no longer deletes the character at the cursor (as <copy> does) it forces All the replaces to occur from the cursor downwards to the very end of the document. I found this the hard way while attempting to do a selective search and replace at the top of a large document. I was changing a column of words into a list by replacing {CR} with a comma and a space. You can just imagine the havoc that the "replace all" command reeked on my (unsaved!!!) document. You have been warned! By the way, <ctrl-E>, presumably relating to Every or End, has exactly the same effect as <ctrl-A>. (This has only been tested on 2.09.)

• **Transferring text between documents** – In Archive 4.2 p.8, there was a hint about the transfer of text between two documents. The implication was that this was not possible with Impression. This is not true – it is just done differently. You select the text in question, press <ctrl-C>, move to the appropriate spot in the other document, click once and insert the text with <ctrl-V>! Jochen Konietzko, Koeln, Germany **A**

The Complete Upgrade Solution



- Uses only eight RAM devices
 - User upgradeable from 1 to 4 Mb
 - Four layer printed circuit board
 - Low power consumption
 - Available without RAM devices
- Bare card - £46 2nd Mb - £79 4th Mb - £199**



- Increases resolution with all Multiscan monitors
 - Doubles desktop work area
 - Custom modes for Taxan and Eizo monitors
 - Suitable for all Archimedes computers
 - RISC OS mode generator available separately
- Atomwide VIDC Enhancer - £35**



- Includes MEMC1a upgrade
 - Upgradeable from 2nd to 4th Mb
 - Large capacity OS ROM sockets
 - No soldering required
 - Four layer printed circuit boards
 - Courier collection of your machine
- 2nd Mb - £340 4th Mb - £520 2 to 4 Mb £207**



- New series Aleph One ARM3
 - 3 to 4 times performance increase
 - Surface mount technology
 - Four layer printed circuit board
 - Courier collection of your machine
- ARM 3 upgrade - £495**



- Uses only eight RAM devices
 - Suitable for A440, A400/1 & R140
 - Fully RISC OS compatible
 - Four layer printed circuit boards
 - Courier collection of your machine
- 8 Mb upgrade - £860**



- All products are cross-compatible
 - Combination deals available on all products
 - Typical combination A310 4 Mb and ARM3 £950
 - Dealer enquires welcome
 - Phone for full details on all products
- All prices include VAT at 15%**



ATOMWIDE

23 The Greenway Orpington Kent BR5 2AY Tel 0689 838852 Fax 0689 896088



SCSI Column

Paul Beverley

There are some more developments on the SCSI front that make it worth having a SCSI Column again this month.

New SCSI software from Oak

At long last, Oak Solutions have released the new software for their SCSI podules along with a new SCISForm program. (Anyone who has an order outstanding for this new software should have received it by now, so if you haven't, do get in touch with us.)

So what's the difference? Well, not a lot for users of fixed hard drives, but for those of us who are making use of MR45 removable drives, life will be somewhat easier. If you want to change cartridges, all you do is dismount the drive and it spins down to a stop; you put in the new cartridge and mount it by clicking on the disc icon and it spins up and opens the new filer window.

If you do what I did and put in the new ROM and try it out, you will find that it doesn't seem to work – you dismount the drive and it keeps on spinning! However, if you then put in the new SCISForm disc and read the readme file (which you should have done first!) you will find what you have to do.

You run the SCISForm program and <R>emove the MR45 from the drive list and then <A>dd it again answering <Y>es to the three questions about STOP, START and PREVENT and then <N>o to EJECT. If you are using partitions on your disc, consult the ReadMe file before going any further – I don't use PCemulator or Unix, so I haven't sorted any of that out.

One thing you will have to remember with removables is to quit your wastebin before dismounting the drive otherwise it will spin down then immediately spin up again as the multi-tasking wastebin tries to access it again!

Moving drive icons

One thing that you will find which is slightly disconcerting is that the hard drive icons move about on the icon bar! When you start up, the icon bar

just shows the hard drive(s) with SCSI4, SCSI5 etc but as soon as you mount one of the drives, it reads the drive name and displays it on the icon bar. The trouble is that, the way RISC-OS works, the SCSI software has to remove the icon and then add it back again so it appears at the far right of the set of icons on the left of the icon bar. Dismounting a drive also moves the icon to the end of the line.

New ranges of Oak SCSI drives

Oak Solutions have rationalised their ranges of SCSI drives into three basic types: WorraWinnie, High Speed and Elite.

WorraWinnie: These are roughly equivalent in performance to the original SCSI drives which Oak produced although some of them may be slightly slower than before. They are, however, rather cheaper than before and the external drives are in slightly more compact cases. The internal 45M drives, for example, are available at an Archive price of £450 compared with the previous price of £525. They are guaranteed for 12 months. (One other difference is the cabling – see below.)

High Speed: These are, as the name suggests, faster drives than the WorraWinnies and they are in a rather more substantial metal case. The 40M, for example, runs at about 800 Kbytes/sec with an effective average access time of between 11 and 16 ms (see the speed table) whereas the 45M WorraWinnie will be more like 600 Kbytes/sec and an access time of 24 ms. The internal 40M drive is £530 which is roughly the same as the original, slower, 45M drives. The High Speed drives are guaranteed for a full two years.

Elite: These external drives are the same Quantum Pro drive mechanisms as the High Speed drives but they are built in such a way that they will come up to the stringent new r.f.i. standards that will come into force in 1992. They are also guaranteed for the full two years.

Additional drives

An increasing number of people are ordering SCSI drives without podules. (They are just £100

less than the prices quoted on the Price List since those prices *include* the SCSI podule.) If your intention is to use it as a second drive with an existing drive, it is important to make this clear when you place your order. We will then be able to change the internal links on the drive before sending it to you. The link changes are necessary because no two devices are allowed to have the same ID number and drives are normally sent out as ID zero. It involves taking the drive out of its case, so it is obviously preferable if you allow us to do that for you.

The other very important point to note is that external WorraWinnies (to keep the cost down) do not have spare connectors to allow daisy-chaining. They just have a flying lead (with an IDC connector on the end) coming out of the back of the drive. This cable plugs directly into the back of the SCSI card. So, if you want to use any other external device alongside a WorraWinnie, you will need to think about the cabling. The best thing to do, therefore, is to contact us and we will sort out your requirements for you before you place your order. We can provide all the necessary cabling.

High speed SCSI drives

One of the advantages of SCSI is that, at the moment, "everybody's doing it". SCSI drives are becoming available for all the more commonly used computers whose names I will refrain from using. High volume production, of course, means lower prices such as we have achieved by using removable drives that were being sold into the Apple Mac market. (They have gone down in price again and so, even with the increased VAT rate, they are still the same price.) In the same way, we have managed to find some extremely cheap and extremely fast fixed 48M drives produced by ZCL who are also selling them into the Atari and Commodore markets and for PC's – there, I've said it!

They are actually 52M Quantum Pro drives that format to about 48.6M; they have an average access time of 17ms (or 11 to 16 ms – see the table) and run at up to 1,000 Kbytes/sec (yes, 1Mbyte/sec) using an Oak SCSI interface. The "alternative test" that we use (copying a large

directory with many files) takes under 7 secs. The table below shows various comparisons. The Archive prices are £530 for an internal 48M drive with podule and £620 for an external.

Atomwide high speed SCSI drives

Atomwide are also doing some new SCSI drives. The first is the same 48M Quantum Pro drive as the one ZCL are using but mounted in their own boxes (in the case of external ones) or mounting brackets (in the case of internal ones). The prices are the same as the ZCL ones (£530 and £620). The other drive they are doing is the Connor 100M drive as supplied in the Acorn A540. These are 17ms (we think) drives – they are very fast, anyway – and are available for £740 (internal) or £840 (external).

The following Archive price comparison may help you see if it is worth considering any of these drives. The prices include Oak podule, (increased!) VAT and carriage and the figures in brackets are the price per Mbyte.

Internal drives

WorraWinnie 45M	£450	(£10.00)
High Speed 40M	£530	(£13.25)
Atomwide 48M	£530	(£11.04)
ZCL 48M	£530	(£11.04)
Atomwide 100M	£740	(£7.40)

External drives A300/400

WorraWinnie 45M	£500	(£11.11)
Removable 42M	£795	(£18.93)
High Speed 40M	£740	(£18.50)
Atomwide 48M	£620	(£12.92)
ZCL 48M	£620	(£12.92)
Atomwide 100M	£840	(£8.40)

External drives A3000

WorraWinnie 45M	£500	(£11.11)
Removable 42M	£795	(£18.93)
High Speed 40M	N/A	
Atomwide 48M	£620	(£12.92)
ZCL 48M	£620	(£12.92)
Atomwide 100M	£840	(£8.40)

Speed Comparison

	Speed Kb/s	File Test (s)	Access Time (ms)
45M W-W	660	27.6	24
45M Removable	590	10.6	20
40M HS	810	8.5	17 (11-16)*
48M Atomwide	980	6.6	17 (11-16)*
48M ZCL	980	6.6	17 (11-16)*
100M Atomwide	800	9.3	17?

*Quantum say that although the average access time is 17 ms, because the drives have such a large "look ahead" buffer (64k), the effective access times are more like 11 to 16 ms depending on the actual application.

Removable drive problems

To ensure that we don't get accused of selling things under false pretences we are repeating the warning we gave in Matters Arising last month.

By now, we have had enough experience of the MR45 drives to spot a couple of weaknesses.

First of all, it looks as if the Syquest mechanisms aren't too happy if they are allowed to run too hot – you can get data errors as a result. The cooling fan is underneath the case so, firstly, you must never put the drives on a soft surface where the feet might sink in and allow the openings around the fan to become obscured. Secondly, given that the drive is on a hard surface, don't pack other things too closely around it, especially at the rear left which is where the fan is, because this again could inhibit the air flow.

The warning about susceptibility to heat came from someone using them in a Mac environment but I also learned it myself the hard way. I had the MR45 packed tightly between the computer and plastic filing tray and I put my WS3000 modem on top of it, which itself runs quite hot, and topped it off by putting a great pile of papers on top of the modem. When I suffered a disc error and lost a couple of articles, I moved the drive to a more open position away from the computer (the cables are 1.5m long, so that's no problem) where I wouldn't be tempted to cover it with paperwork.

The second weakness is that it looks as if the auto-parking of the heads is not infallible. In other words, if you regularly switch the power off without dismounting the drive (which is bad practice, anyway), it is possible that you may get disc errors eventually. So, you have been warned – always remove the disc *before* switching off the power. The problem, of course, is that you cannot allow for power failures but these occur a lot less frequently than switching the power on and off yourself. What we are therefore saying is that these drives *are not 100% reliable*. In fact, Oak Computers have now decided not to supply 45M removable drives any more because they don't feel that the drives fit in with their "zero defect" policy.

How then can we justify continuing to sell them? Well, as long as you know what you are buying – and we are not making any secret of the drives' limitations – it is up to the individual to decide if it is worth the risk since we cannot, of course, guarantee you against any data loss.

The main reason that we are continuing to sell them is that they are just SO convenient and that there is nothing else that is currently available, at a sensible price, that will do the same job. (Magneto-optical drives are reliable, but at £3,800, they are not realistically priced for the average user.

I am using MR45's all day, every day and I am prepared to take the risk because, as I said, they are just so convenient for me. All the material for the magazine, and a lot of other transient data, is held on one cartridge which I take backwards and forwards between home and the office. Before I had the MR45's, I had to use floppies to carry the text back and forth, copying it to and from the hard drives at each end which was a real pain. I had to remember to copy files to floppy and then remember to copy the modified versions back onto the hard drive in the office. As it is, I *know* that I will always have access to the most up-to-date information and all I have to *remember* to do is bring the MR45 cartridge home with me. Because I am aware that there is always the possibility of data corruption, I back up all the

current files onto the fixed hard discs fairly regularly and, so far, I have not lost any data.

New removable drives (& prices)

Atomwide are also now producing removable drives for the Archimedes. They are the same Syquest drive mechanisms that are used in the MicroNet MR45's. One noticeable difference, however, is the fan. Atomwide have used the most powerful one they could find to try to make sure the drives don't over-heat. They have also placed it at the rear of the box and not underneath. In terms of looks, I think this one tones in better with the Archimedes than the MicroNet drive, so I would, personally, go for the Atomwide drives. The prices are £795 and £595 with and without Oak podule respectively (or £775 with Liguinity podule).

One good effect of the arrival of the Atomwide drives is that we've been able to force a further price drop on the MicroNet drives and we've been able to get them down to the same price as the Atomwide drives despite the VAT increase.

SCSI connecting cables

There are a number of different connectors used for connecting SCSI devices, so if you are mixing and matching different podules and drives, you need to know what cables and connectors are needed. Basically, there are three types: IDC, Amphenol and 25-way D-type.

The IDC connectors consist of two rows of 25 pins – the type used on the drive mechanisms themselves and on the Oak SCSI podules.

The Amphenol connectors are the same style as the so-called Centronics connectors used on most parallel printers except that they are 50-way instead of 36-way. These are the type used on both the Acorn SCSI podules and most external SCSI devices. Thus, if you have one SCSI device and want to daisy-chain another device, you will need to buy an Amphenol to Amphenol cable.

The 25-way D-type connectors are the same style (and size, in fact) as the printer connectors on the back of the Archimedes. These are the type used by the newer Liguinity podules.

(Personally, I don't think that this is a good choice of connector because, if someone non-technical is trying to connect a SCSI drive to the computer, there is a choice of two *identical* sockets. I don't know whether a wrong choice of connector is likely to cause electrical damage, but it would certainly cause confusion! OK, the Mac fraternity have been using 25-way D-types for their SCSI's since the early days, but why follow a bad example?)

Four useful combinations of connector are now available through N.C.S. at £15 each – IDC to IDC, IDC to Amphenol, Amphenol to Amphenol and 25-way D-type to Amphenol. **A**

File Handling for All

Mike Allum

I was interested to review this book because my post-graduate project requires some data file handling on an Archimedes. Since all my previous experience was in function-strong systems (machine control) I had created and used the odd data file but never on such a scale as now.

As a result, this review is from the point of view of someone who can handle the technicalities but is (was!) unaware of the subtleties of the subject.

This book is 143 pages long organised into nine chapters. A comprehensive index, bibliography and some appendices round it off. Short example programs are included in the text. These are

written in BBC BASIC and many of them are available, in augmented form, on the program disk which is available separately.

How it works

The chapters progress from simple data storage/retrieval through to basic database concepts. Each chapter has a definite theme and, if followed through, will build the skills required for the following chapter.

The earlier chapters account for most of the programs which are short and easily typed in. The later chapters have the majority of the diagrams and tables, most of which are clear and to the point.

Where a technique is introduced, it is often presented with a list of its advantages and disadvantages. When the reader has been thoroughly disenchanted with it, the next best method is then trotted out.

Conclusions

The first thing to stress is that the techniques learnt here are almost all generic. With the exception of the odd Acorn-specific area and the use of BBC BASIC, this book could be used by anyone wishing to learn about file techniques.

The audience itself would be from the complete novice up to, say, a first-year degree student requiring a quick insight into file handling.

Teaching method

The method of starting small and introducing new techniques one-by-one is admirable and serves to make the book a model of clarity. I would compare it with Ken Stroud's superb mathematics books in its ability to educate the reader.

The readability is further improved by the lack of ambiguity. So many of my student texts (and,

indeed, so many modern design methodologies) are rendered nearly useless by the author "casting his net too wide". This book may gloss over the occasional point or occasionally ignore a "better" technique but you can be sure that it is in the interests of clarity.

Due to the index, this is certainly a book which can be occasionally "dipped" into within the constraints of the audience outlined.

Overall, a most readable primer.

Program disk

The program disk is documented in the book itself and my only criticism would be that the programs themselves should be commented. The disk itself was of limited use to me personally but would be useful to the novice.

File Handling for All on the BBC Micro and Acorn Archimedes by D Spencer & M Williams is published by Beebug Ltd. (ISBN: 1-85142-087-8). The book is £9.95 and the disc £4.75 plus postage from Beebug. **A**

Capsoft Disc N° 1

John Schild

The other day someone handed me a copy of a home-grown Parish Magazine. The merest glance was sufficient to reveal that it had been produced using Impression II. The give-away? – those very familiar Impression frame borders.

There's nothing wrong with an identifiable house style but few of us would want our own to be quite indistinguishable from all the others. Which is why I suspect there will be a welcome for this first disc-full of goodies being marketed privately by B. J. Thompson. It is crammed (not a spare byte to be found!) with draw-fonts and frames for DTP, including as a bonus for Impression users, 18 ready made Impression frame borders. The draw fonts (upper case only) have been designed for use as dropped capitals and for poster production.

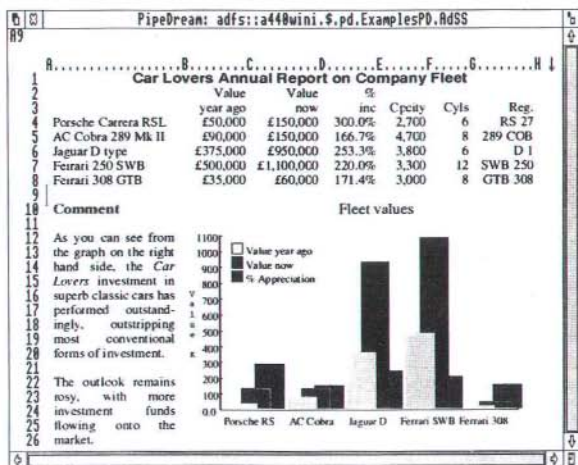
Acorn Draw files and outline fonts, when used in conjunction with such innovations as Laser Direct, have broken down the barrier between cheap and cheerful home produced stuff and the

high-tech output we expect of the glossies. Consequently, anyone aspiring to sell artwork for the Archimedes must be aware that they are pitching at an increasingly discriminating market. Also, as the supply of Acorn public domain discs multiplies, the asking price can only be modest.

I can only express my own view that this Capsoft offering meets any reasonable criterion of quality and can be recommended. If there is a criticism, it is that too much detail has been added to the corner motifs of some of the Impression borders, such that, at the smaller sizes at which they might be used, only an undifferentiated mass is visible. To his credit, the programmer has acknowledged this problem by offering a number of different versions of his borders. Illustrated are Aston draw-font S, surrounded by IntSqu10. Eye-catching, but how do you prevent black frames looking funeral?

Capsoft 1 is available on prepayment of £6.00 from B.J. Thompson, at 8 Oldgate Avenue, Weston-on-Trent, Derbyshire, DE7 2BZ. **A**

PIPEDREAM 3



PipeDream 3 breaks down the barriers between word processor, spreadsheet and database. You can include numerical tables in your letters and reports, add paragraphs to your spreadsheets, and perform calculations within your databases.

Based on PipeDream 2, the best-selling integrated package for the Archimedes, PipeDream 3 has been completely re-written to take full advantage of RISC OS - if you can use RISC OS, you can use PipeDream 3. It is fully multi-tasking and multi-windowing, so you can work on many documents at once and instantly move information between them. And since PipeDream 3 can automatically load and save most popular file formats, including VIEW and First Word Plus, switching to it from other programs has never been easier.

Power, flexibility, speed, ease of use. PipeDream 3. Breaking down the barriers.

For a free brochure, see your Archimedes dealer, or phone us on 0954 211472 or return the coupon.

PipeDream 3 is for all Archimedes computers with RISC OS and 1Mbyte of RAM.

PipeDream 3 costs £147.00 +VAT.

Major features include:

- many documents loaded at once
- intuitive RISC OS user interface
- displaying and printing of pictures within text
- built-in 93,003 word spelling checker
- file compatibility with PC & Z88 PipeDream and BBC View Professional
- background recalculation
- keystroke compatibility with Z88 & PC PipeDream
- Z88 filing system
- automatic loading of VIEW, ViewSheet, Lotus, First Word Plus, Tab and CSV files
- automatic saving of VIEW, Lotus, Acorn DTP format, Tab and CSV files
- multi-field sorting
- use of all available fonts
- 62 spreadsheet functions
- external references for 3-D modelling
- macro file recorder
- slot protection

For a free brochure, complete and return this coupon
PipeDream 3 ☐ View Professional ☐

Name

Address

Post code

Colton Software, Broadway House, 149-151 St. Neots Road, Hardwick, Cambridge CB3 7QJ, England.

Fax: 0954 211607 Tel: 0954 211472

All trademarks acknowledged. The chart in the screen shown above was produced by sending numbers from PipeDream 3 to Linguistix's Presenter 2 and then loading the resulting graph back into PipeDream 3.

Colton Software, Broadway House, 149-151 St. Neots Road, Hardwick, Cambridge, CB3 7QJ, England.

Fax: 0954 211607 Tel: 0954 211472

PipeLine

Gerald Fitton

Thanks again to all who have written to me. This month, the major part of my column is devoted to a continuation of my description of how to print labels; but first a couple of other matters.

Macros

Alan Highet asks about a macro for changing his printing quickly from RISC-OS printer drivers to PipeDream printer drivers. The macro record facility <Ctrl-FY> records mouse movements so it's possible to record a couple of macros, one called Parallel and the other RiscOs which will do this for you. On the Archive monthly disc, you will find a couple of such macros. You will probably have to change the file name of the PipeDream printer driver to match your own. Drag the file Parallel over the PipeDream icon, change the file name and the path to that of your printer driver and resave the file. Whenever you want PipeDream printer drivers, just double click on the macro and it will do the job. The macro RiscOs will reverse the operation.

I use ligatures with RISC-OS drivers. A ligature is one character 'fi' which replaces the two characters f and i (or fl for f l). The macro Ligatures (on the Archive monthly disc) will Search and Replace all occurrences of f i with fi and f l with fl. Again, just double click on the macro and the job will be done.

When I started this PipeLine column, one of the things I expected to happen was that there would be an abundance of macros (just like the short programs which appeared for Wordwise). It did not happen at first but now I'm beginning to see signs that, whilst I was right in principle, I was wrong on the time scale. Please do send me your (recorded) macros on a disc.

PipeDream\$Path (Macro)

If you know how to do it, please include this system variable (or the <PipeDream\$Dir> system variable) in your PipeDream macros so that others can use them from their own directories without having to amend the path names.

Periodic table

Dr Alan C Jarvis tells me that he has a database, in PipeDream format, listing about 10 properties of about 103 elements. If you are interested, write to me and I will pass your letters on to Dr Jarvis.

Interword files

It seems that, to register a <Tab> or <CR>, Interword changes the following character to a top bit set character. Has anyone unscrambled this code? I suggest that the Interword file be loaded directly into Pipedream, a Search & Replace macro run, followed perhaps by saving and reloading the file to convert [&09] characters back to Tabs.

Printing labels

There are two ways of printing labels from database files such as [Girls] where each row is a record and each column a field. One method uses the lookup function to find the names and addresses in a dependent document held in memory; that is the method I described in the January 1991 PipeLine column. The second method uses data from a parameter file held on disc. In turn, this second method can be implemented in either of two ways. The first is to use a roll of tractor feed labels and PipeDream printer drivers and the second is to print onto sheets of A4 labels using a page printer with RISC-OS printer drivers.

Tractor feed labels

Although you can buy rolls of tractor labels which are more than one label wide, generally, the additional problems that this creates is not worth the slight reduction in cost per label. I shall assume that you are using single width labels but, if you aren't, I suggest that you have a look at the paragraphs below on using page printers because I think they will help you.

For the example, I am going to use the database file [Girls] which appeared in the January 1991 PipeLine column but is shown here as figure 1. This file, together with all those referred to in this article, is available on the Archive monthly disc and on the April PipeLine disc. In addition to your PipeDream format database, [Girls], you'll need two more files; the first is a template for a

PipeDream: adfs::PipeL03.\$,PL9101.Girls

C5 lookup(\$B5,\$B7\$B16,C7C16)

	A	B	C	D	E	F
1	A Simple DataBase					
2	by Gerald L Fitton					
3						
4	Key	Name	Hair	Eyes	Character	Present
5	Name:	Sandy	Auburn	Blue	Fiery	Sports Car
6						
7						
8	1	Jane	Blond	Blue	Dumb	Chocolates
9	2	Janet	Mousey	Brown	Intelligent	Diamonds
10	3	Sarah	Blond	Brown	Thoughtful	Good Book
11	4	Janice	Green	Yellow	Modern	Motor Bike
12	5	Sandy	Auburn	Blue	Fiery	Sports Car
13	6	Julie	Brown	Green	Athletic	Sports Kit
14	7	Sally	Black	Black	Energetic	Stallion
15	8	Liz	Bald	Bloodshot	Inebriated	Wine

Figure 1

single label which I shall call [OneLabel], and the second is a Tab format parameter file containing data extracted from your database, [GirlsTab].

The template

Using this method, each label is treated as a single page. The file [OneLabel] is the template for this single page. Click on the installed PipeDream icon to create a new blank document and save it under the name OneLabel; <Ctrl-FS> is the short cut for renaming and saving a file (at the same time) if you don't want to use the menus.

Most tractor feed labels are 1.5" between labels; at 6 lines per inch this gives a page length of 9 lines per label. Set your page length to this number of lines. Click <menu> and run the pointer through Print - Page layout and set the Page length to 9. I prefer to set all margins to 0 so that what I see on the screen is what will be printed (What You See Is What You Get - WYSIWYG).

My label has three columns; for your own label you might prefer only one or two. Figure 2 is a screen dump of the file [OneLabel]. The first column is used to set the left margin as 3 characters. In the second column, from rows 3 to 7, I have Name, Character, Present, Eyes and Hair corresponding to the five fields of my database; I have

changed the order from that of [Girls] just to prove that you can print your label in a different order from the order of the fields in the database. In the third column you will see I have the @ fields @0@, @3@, @4@, @1@ and @2@. Note that, although the girls' names appears in the database file, [Girls], in the second column, B, the parameter which finds the name in the label template file [OneLabel] is @0@ (and

not @2@) because the girls' names will be stored in the first column, column number 0, of the parameter file [GirlsTab].

It is important that you use no more than the 9 lines allocated to your label; the label will be printed exactly as you see it on the screen (including the width of the columns) with a couple of blank lines at the top of the label and a couple of blank lines below. Setting the page length to 9 will ensure that the two lines, 8 and 9 are skipped over by the printer before starting on the next label.

PipeDream: adfs::HardDisc4.\$,PipeLine.On

A1

	A	B	C
1			
2			
3	Name	@00	
4	Character	@30	
5	Present	@40	
6	Hair	@10	
7	Eyes	@20	

Figure 2

The parameter file

This is the file called [GirlsTab]. Load your database file, [Girls], and mark the block containing the data which you wish to use on the label. From figure 1, you will see that this is the block B8F15 containing the details of the eight girls. Save this marked block to disc as [GirlsTab] using the option Files - Save - Save only marked block and click in the Format Tab box to turn it on (instead of using the default PipeDream format). If you have a more complex database, you may wish to sort it first or save only a selection of rows (e.g. people who still owe you money) so that only part of your database is saved as the Tab parameter file.

Printing the labels

Having saved the parameter file to disc, you can remove the database file, [Girls], from the screen leaving only the label template file, [OneLabel], on the screen.

Now invoke the Print command. Click on the option Print - Print - Use TAB parameter file and type the name of the parameter file, [Girls-Tab], into the dialogue box. When you click in the OK box, all your labels will be printed.

Problems

Two more points. Firstly, be careful to set the dip switches inside your printer in such a way that things like *Skip over perforations* do not confuse the printer into thinking that the page length is other than the 9 lines you have set from within PipeDream. Secondly, don't try to use proportional spacing.

If you have any problems then write to me enclosing, on disc, a copy of part of your database, your label template and parameter files. Also send, on paper or better on a handwritten label, a copy of what you are trying to achieve. I'll see if I can help you.

Page printer labels

You can get A4 sheets of labels with one, two, three or even four columns and four, five, six or eight rows but the one most used is three labels wide and six labels deep. I shall concentrate on this layout but the instructions are applicable to any format of label.

This time you need not two but four extra files. The first two files, the template file [OneLabel] and the parameter file [GirlsTab] are created in the same way as described for tractor feed labels.

The print list

The third file, which I have called [GirlsList], is created by popping up the Print - Print submenu and, instead of printing to the printer you select the option Print to File. Enter the file name [GirlsList] in the file name dialogue box and click on OK.

A couple of things to look out for. Firstly, when printing to the file make, sure you have selected as your Print - Printer configuration - Printer type the Parallel option. If you use the RISC-OS drivers, you will send a graphics dump to your [GirlsList] file. Secondly delete completely the name of the Print - Printer configuration - (PipeDream) printer driver so that the dialogue box is blank. If you don't do this then you may introduce unwanted printing codes into your [GirlsList] file.

Changing one column to three

I find it best to create a blank label sheet, mine is called [ManyLabels], put a few marks on the page and print a single page. I then adjust the column widths and page lengths until I am sure that my final layout will match the labels. I have chosen my three columns each to be 24 characters wide so that the whole set of three labels will fit across a 72 column screen. Also, I have chosen the page length to be that of six labels, namely $6 \times 9 = 54$ lines. Delete any registration marks you have

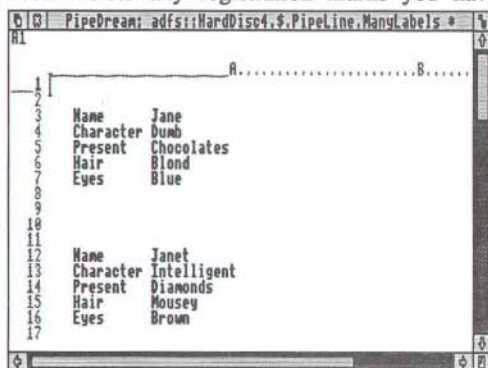


Figure 3

made, place the cursor in cell A1 (click in A1) and then drag the file [GirlsList] into the blank label sheet.

You should get something which looks like figure 3. You have one column of data with the data for a new label every ninth line. What you need is a file with three columns to match the labels. To do this you divide the labels in column A into three and use <Ctrl-BM> (Block Move) to move one third of the labels into column B and the last third into column C.

Printing

The above description works if you use a constant pitch font such as Courier (Acorn's Corpus) on your labels or if you leave out the field names (Hair, Eyes, etc). It is more difficult, but not impossible, to use a proportional font such as Helvetica (Acorn's Homerton) and include field names or graphics. Essentially, if you want the field names or a graphic (eg a logo) on each label then you will need more columns in the [ManyLabels] file and you will need to load the graphics or data to each column individually. I'll get round to an explanation of how to do that in a later article but, for now, either leave out the field names and graphics or use a fixed spaced font.

Finally, make sure that you change the printer driver back to RISC-OS before printing. You can use a print scale factor, adjust the margins or adjust column widths retrospectively if you have gauged the label positions incorrectly.

Problems

Send me a set of disc files, an explanation of what you want to achieve and a blank sheet of labels. I'll see what I can do for you.

A different database format

From John Jordan comes the idea of using a multi-row record format as a database. Essentially John has a key field (e.g. surname) in column A and the multi-row name and address (ready for a 9 row label) in column B. Other data can be stored away in columns C, D, etc. When he wants to print a set of labels he marks column B and prints out the marked block. I think this is simple and ingenious. Watch this space for further details.

The (long awaited) PUI

In the June 1990 PipeLine column I gave a brief

description of the way that Colton Software's mouse driven PUI add-on would work. I believe that it is now available but only direct from Colton Software. For those of you with the June 1990 edition of Archive I suggest that you go back and have a look and see if it might be of interest to you. If you haven't got that edition or if you want to know more about it then drop a line to Colton Software, Broadway House, 141-151 St Neots Road, Hardwick, Cambridge, CB3 7QJ (preferably enclosing a self addressed label and stamp) for full details. Please mention this column in your letter to Judith or Robert (letters only, no 'phone calls please).

Essentially, the PUI overcomes many of the problems associated with unwanted text reformatting due to making a mistake when you have selected an unsuitable set of options. The most annoying combination is with Wrap, Insert on return and Justify, all selected when using a multi-column layout. If you decide to delete a single character in one column then that column reformats from that point downwards and your carefully tabulated layout is destroyed.

The Z88

Thanks to those of you who have told me you have one of the wonderful little machines. Jill now uses ours so much that I might have to get a second one for my own use! Using the Z88 PipeDream she types up the documents she wants printed, we then port them across to the Archimedes and print them out on the laser printer. I've created a (tractor feed type) file of labels on the Archimedes, ported it across to the Z88, connected a dot matrix printer to the RS232 port of the Z88 and printed the labels. This has freed up the Archimedes for other laser printer jobs. If you have any problems in linking these two machines then please drop me a line. If you have any advise then drop me a line too.

In conclusion

Thanks for all the words of praise I keep getting from you about this column. Now let's have a few criticisms as to how it might be improved!

If you send anything substantial then please let me have it on a disc. It makes it easier to understand and easier to deal with. **A**

As market leaders in SCSI drives for the Archimedes and A3000, Oak Solutions has earned an enviable reputation for quality and reliability.

The recent introduction of the Worra Winnie range has brought the price of our SCSI hard discs within the price range of users who previously would not have been able to consider adding a hard disc to their system.

Our bulk purchasing power allows us to bring you these drives at staggeringly low prices. And yet all drives are top quality units, manufactured and tested under a zero defect quality control regime to ensure the highest levels of quality and reliability and, of course, come with our 12 month 'no quibble' guarantee.

The drives fall into two distinct categories; internal drives for the 300 and 400 series Archimedes machines, and external drives for the A3000 series machines (and also for 300/400 series - please specify when ordering).

The drives are available in 20Mb, 45Mb, 80Mb, 100Mb and 200Mb sizes. All drives are high quality 3.5" devices manufactured by Seagate or Rodime.

Both internal and external drives have auto-parking heads, and access times of 40mS (24mS on the 80Mb drives, and 18mS on the 100Mb and 200Mb drives). All of the drives transfer data at between 600Kbytes per second and 1Mbyte per second, which is up to three times as fast as conventional ST506 hard discs.

The SCSI card gives great scope for future expansion, and can support a further three hard discs, as well as tape streamers, CDROMs and Magneto Optical drives.

Please specify type of computer when ordering.

Internal Drives for 300/400 series

20Mb	299.00
45Mb	399.00
80Mb	599.00
100Mb	795.00
200Mb	1195.00

External Drives for 300/400 series and A3000

20Mb	349.00
45Mb	449.00
80Mb	649.00
100Mb	845.00
200Mb	1245.00

Add £10 to cover P&P. Prices exclude VAT



The Price Barrier is Broken

SCSI Hard Disc Drives With
Oak Solutions' 16 bit SCSI card
from only £299.00

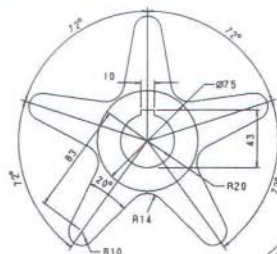
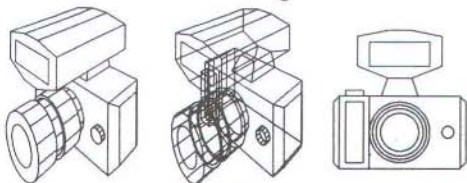
Worra

Winnie

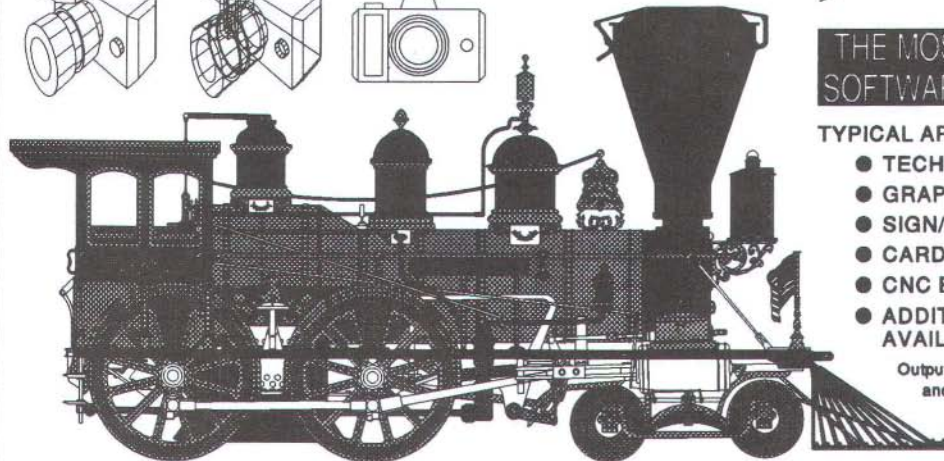
by



TECHSOFT DESIGNER V.3



THE FIGHTING
FALCON



THE MOST VERSATILE GRAPHICS
SOFTWARE FOR THE ARCHIMIEDES

TYPICAL APPLICATIONS:

- TECHNICAL DRAUGHTING
- GRAPHIC DESIGN
- SIGN/POSTER DESIGN
- CARDBOARD ENGINEERING
- CNC ENGRAVING/MILLING
- ADDITIONAL POST PROCESSORS
AVAILABLE FOR CNC LATHES

Outputs to plotters, cutter plotters, CNC engravers,
and via RISC OS printer drivers. User editable
menus make DESIGNER ideal for education.

£195 + VAT

Site and LEA licences
available. Evaluation
software available free.

TECHSOFT

PRODUCT GUIDE AVAILABLE DETAILING ALL TECHSOFT PRODUCTS, INCLUDING:

- CAD and CAD/CAM software for the BBC/Master
- DRAWMILL CAD/CAM milling software for the Nimbus
- SIGNEDESIGN signwriting software for IBM/Nimbus
- wide range of plotters and accessories
- digitisers
- Roland CAMM products
- cutter plotters
- CNC engravers/milling machines
- CAD peripherals, etc.

TechSoft UK Ltd.,
Old School Lane, Erryrys,
MOLD, Chwyd. CH7 4DA
Tel: (082 43) 318 Fax: (082 43) 584

THIS IS AN UNRETOUCHED COPY OF THE OUTPUT FROM A SINGLE FILE CREATED ENTIRELY USING DESIGNER V.3, INCORPORATING A SELECTION OF RISC-OS OUTLINE FONTS

Improving your Archimedes' Audio Quality

Jeremy Mears & D.P. Allen

Jeremy starts... With the latest release of the Serial Port's 'Tracker', details were published of a small alteration that could be made to an Archimedes to "phenomenally" improve the quality of audio output. The purpose of this article is to elaborate on that, giving exact details of the operation for both Archimedes and A3000.

As it currently stands, the Archimedes is fitted with a low-pass audio filter to compensate for the poor bass capacity of the internal speaker. Unfortunately, the same filtered signal is fed to the headphone jack socket at the back of the computer, now lacking most of the higher frequencies and making all output taken from this socket sound pretty deflated. It is possible, however, to bypass the filter and tap off the complete audio spectrum to an amplifier or other device.

Depending on whether you have an A3000 or other Archimedes, the operation is different. Inside the A300 / 400 (and presumably others) there is a 10 way jumper plug located near to the headphone jack socket at the back of the computer. This consists of two rows of 5 pins, the top row numbered 1 and the bottom numbered 2. The left pin of row 1 is the signal from the lefthand channel and the right pin is the right channel. All the pins in row 2 are earthed. All that has to be done is to take the output straight from each of the two channel pins and connect the ground wire to any of the grounded pins. Because of the jumper plug there is no need to do any soldering to the board - instead leads can just be fixed to the relevant pins which can easily be removed if necessary.

On the A3000, there is no jumper plug so you do have to solder directly to the motherboard which would invalidate your warranty. Should you choose to go ahead with the operation, you can tap off the left channel from the keyboard side of resistor 86 and the right channel from the keyboard side of resistor 99. The connection to ground is probably best made to pin 1 of the expansion port, on the inside the computer.

Once these connections are made, you will notice a great improvement on music and particularly samples at higher rates - in fact samples taken directly from CD into my 8-bit sampler are now very comparable with CD quality!

An added bonus is that the annoying buzz that the Archimedes normally emanates all over the audio signal is completely gone! One drawback of the modification is that with some games such as Interdictor II (5 KHz!) and Manchester United, the poor quality sampling shows up as a few of the samples sound 'tinny'.

I made the modification several months ago and, on hearing the improvement, all of my friends have followed suit. Certainly, once you've got over the mental trauma of maybe invalidating your warranty and particularly if, like myself, you are a bit of a Soundtracker buff, this is a simple modification that I would wholeheartedly recommend. **A**

(By the way, it's no good saying, "Archive told me to do it" - you will still be invalidating your warranty. You have been warned. Ed.)

And here are a few extra comments lifted from a hint sent in by D.P. Allen...

Improved audio output frequency range - The auxiliary audio connector provides obtain unfiltered audio. This means you get increased top-end frequency response, which is like comparing FM radio to medium-wave quality. You can fit your machine with another audio output socket, quite easily, without altering your machine's case.

Lifting the lid on the Archimedes, you will see that the connector is a group of ten pins, called an IDC PCB-mounted connector, near the headphone socket at the rear right-hand edge of the PCB.

Our pins are: 1.unfiltered left-channel, 9.unfiltered right-channel and 2, 4, 6, 8, 10. screen/earth. Pins 1 & 2 are identified on the PCB, so you will see that one row of pins is odd, one row even.

The connector is intended for a ribbon cable. There may be audio podules which use it. *(None*

Improving the Sound Quality

that I know of. Ed.) This mod is just a couple of plugs and a short lead, so is easily removed.

A ten-way IDC socket can be purchased from any electronics hobby shop, (e.g. Tandy). As only three pins are used for this 'add-on', ribbon cable is not needed. The three wires will need to be about 6 inches long. A 3.5mm stereo jack socket is also required. I suggest using the type of 3.5mm socket that would fit on the end of a length of cable (referred to as an in-line socket) rather than the type you would mount on a front panel. Make sure it's not the type that shorts its contacts when you remove a plug from it. This won't blow up your Archimedes but if you want to use the filtered audio output, the 'shorting-type' socket will connect the two stereo channels together so that the unfiltered socket will become mono and, in some cases, rather distorted.

The three (stranded) wires can be pressed into the IDC socket's wiregrips and the clamp-top closed with pliers or in a vice. This type of connector

makes contact by cutting through the wires' insulation as the clamp is closed, so if you're new to wiring, you may find it easier to use a piece of ribbon cable in which, because each wire's insulation is welded to the adjacent one, they are all in line for the connector's pins.

From inside the case, pass the lead(s) through the same hole used by the existing headphone socket and solder the three wires to the appropriate tags on the 3.5mm socket. (after passing them through the jack socket's cover!) Plug in the IDC connector and away you go.

Surprisingly, I found no increase in background noise level. In fact there was less. I can still plug into the existing socket, if necessary.

The two leads connecting the headphone socket to your stereo AUX sockets should be screened. Long unscreened leads can act as an aerial. I found that with a 3 metre unscreened lead to my stereo amplifier, I picked up Radio Moscow at dusk! **A**

ATTENTION ALL GAMES PLAYERS!

Do you wish that you could use a standard Joystick on the Archimedes?
Now you can.....

The Joystick Interface from The Serial Port

- The Joystick Interface plugs into the parallel printer port - a switch selects the joysticks or printer.
- No special support is necessary for The Joystick Interface so it will work with virtually any game.
- It comes complete with simple to use software that allows it to mimic key presses and includes control modules for many existing games. It can even mimic the mouse!
- Also supplied is a programming language that allows more complex modules to be created.

All major new games releases - including those from The Fourth Dimension, Minerva, Krysalis, Eclipse, CIS and others - will work with our interface.

"...when I was given this device, I was very sceptical - but it all works...in the vast majority of cases the thing will work, and work very well."

Computer Shopper February 1991

"The programming language and the compiler enables the joystick....to be used to control virtually any piece of software. Since the RTFM interface does not do this, The Serial Port's effort is the best buy of the two."

Acorn User February 1991

Available for only **£23.95** exc VAT & P+P from most good dealers or direct from ourselves

The Serial Port Burcott Manor Wells Somerset BA5 1NH
Tel: 0243 531194 Fax: 0243 531196



Comment Column

• **Mike Beecher writes...** about the Clares/EMR clash(?) in your Comment Column (4.3 p16 & 4.5 p 15) – I should like to put your readers comments into perspective! Mr Leslie Hay who wrote in February 1991, purchased an EMR Midi 4 from us on the 20th April 1989. At that time, EMR were the only company producing any Midi products for the Archimedes (as far as we are aware, the Acorn music editor was yet to have Midi in its later Maestro version) and it was quite likely therefore that some comment was made on purchase that our EMR Midi 4 would work with the Midi software. (However, we could never say that it is guaranteed to work with *all* Midi software for obvious reasons.)

Secondly, at the time of developing the EMR Midi 4, there was no Acorn specification of SWI calls for Midi available. Since then, we have purchased, under licence from Acorn, the use of various Midi source code to enable us to sell a software module on disc. Since this had to be paid for at no little expense and required additional programming time at EMR, we feel it quite fair to charge £6.95 inc VAT for this disc – especially as there has been no price increase in EMR Midi 4 boards. There is little profit for any company in a price as low as this anyway.

Finally, we do not have a clash with Clares as you question in your heading. In fact, Dave Clare, along with myself and several other major software houses, spend a large part of our time travelling with Acorn showing our various products each year.

To help readers' knowledge and better understanding of Archimedes computer music, we do offer free technical advice on the telephone most days of the week and provide training courses for computer music on the Archimedes at our South-end Computer Music Learning Centre. Information on courses and a full brochure of over 28 products now produced by EMR for making music, are available direct from EMR.

• **Routines Library** – In Archive 4.2 p 18, Elliot Hughes introduced the idea of a column to collate

routines, algorithms & programming ideas in general. I have long thought that it would be incredibly useful to draw on a large database of routines which are known to produce correct results under given conditions. I believe the hallmark of good programming lies in the basic structure of the program. If you can develop routines to do particular tasks very efficiently, you have the basis of an expandable library.

Routines which would be of interest, range from the frequently used to the unique solution to a complex problem. Once you have a routine which performs a particular task then the next time the same problem arises, as they invariably do, you have a ready made solution. Effort can then be directed to solving the overall problem rather than "re-inventing the wheel".

Objectives

- Build a library of varied routines
- Provide solutions to problems in a particular language
- Optimise routines for maximum efficiency
- Answer common programming problems
- Provide a forum for discussing programming techniques
- Help prevent programmers from "re-inventing the wheel"

Types of routines

- sorting
- searching
- data input
- screen handling
- file handling
- lists, queues, stacks, trees etc
- solutions to a problem in a particular language
- that incredibly useful routine you're sure you once saw in an old magazine, that you are now convinced would solve your current programming dilemma
- common everyday routines (e.g. make a string upper case)
- weird & wonderful
- miscellaneous

Alexander Bisset **A**

Powerband

Leonard Melcer

Not being a great fan of all these mindless "Shoot 'em up" games, I tend to look for the more meaningful ways to pass my spare time. Powerband is the new game by Gordon J Key from 4th Dimension, although it is more of a simulator than a game. You are a Formula One racing driver, out for the hell of it (Fun mode), competing on a track of your choice against the best of the rest (Game mode) or making your bid to be the next world champion (World Championship mode).

Playing the game

Loading the game is fully desktop compatible, unlike some earlier 4th Dimension games, and presents an opening screen of the Powerband logo and copyright information. A picture of a racing car then appears and the theme tune of BBC2's motor racing program – "The Chain" by Fleetwood Mac – starts up. You then switch discs to the "Tracks" disc and are prompted to enter your name. Finally, the main menu appears and you may begin to race.

The main menu allows you to select whichever mode you want. In Fun and Game mode, you can choose the racing track you want to race on, via the Airport, which shows you the track from above along with fastest times recorded. Unlike some other games, new fastest times are recorded and saved on the disc in your name, so you *can* prove to everyone that you broke the lap record. In World Championship mode, ten of the sixteen available circuits are randomly selected for you. You then compete over a minimum number of laps, which differs according to the particular track you are on, to gain points in the race to be the champ. In Game and World Championship mode, you first have the opportunity to race against the clock, to improve your position on the grid, by hopefully recording a new fastest lap and getting pole position.

Before each race, you can visit the garage to modify the car to suit your driving abilities, different engine sizes, gearboxes (4-speed automatic, 5 or 6 or 7-speed manual, or 5 or 6 or 7-speed

electronic), steering ratio (the sensitivity of the mouse for steering), the tyre compounds (soft, medium or hard), and the angles of the front and rear aerofoils (controlling under-steer and over-steer).

You really have full control over the car you want to drive. No excuses – you choose the configuration. Each option directly affects the way in which the car handles in terms of its top speed, cornering abilities, acceleration and braking abilities.

The car is controlled using the mouse, with <adjust> being the accelerator, <menu> the brakes and, with manual gearbox selected, <select> the clutch. The automatic gearbox is the easiest to handle, but with only four gears, is rather slow. The manual gearbox, with up to 7 gears available, is the hardest to control, requiring the coordination of accelerator, clutch and gear selection which, by the way, is selected by the <up-arrow> and <down-arrow>. The electronic gearbox is the easiest to control, you just press the <up-arrow> or <down-arrow> to move up or down a gear – no clutch necessary.

Cornering too fast causes you to notice a number of things. Firstly, squealing noises from the tyres. Both high-pitched and low-pitched, indicating under-steer and over-steer respectively. This can be changed by altering the angles of the aerofoil, although this does have the disadvantage of slowing you down a little. Secondly, associated with squealing, the tyres can wear too quickly and you may not be able to finish the race. This can be remedied by using hard compound tyres, which wear well but do not have the same grip as soft or even medium compound tyres. Thirdly, and most obviously, you are driving too fast. The cure? – slow down!

You can drive too fast and it will not actually help. This is *not* one of those games where going flat out will help. You cannot drive with your foot (or in this case, finger) pressed firmly down the whole time. A little judgement and skill is required to be able to corner successfully (incident

free!) by finding the right line to take. I have had a little Formula Ford racing experience and can say that this game really does make me feel like I am back on the track. Of course, the consequences of a 260 mph head on crash is where any similarity ends.

Unlike real racing driving, if you hit a wall or barrier, all is not lost! You do get a number of "lives". A really severe crash, like going into the side of a grandstand, would result in immediate "retirement" but grazing the side of another car or skidding along a barrier, simply reduces your resistance to further crashes. As with other similar computer games, every time you get hit, you suffer a power drain.

One thing that bugs me is the competition. I do not mean, "Wouldn't it be great not to have any". It's just that they do tend to play rather dirty, by which I mean that they are very unpredictable. However careful I am overtaking other cars, I always find myself hitting them, or rather, they hit me, by slowing down and moving directly in front of me!

Conclusions

Problems with overtaking other cars does not mar my enjoyment of the game, as it simply increases my awareness at the time I come up behind an-

other car. The laps are in real time, ranging between one minute and two to complete. Imagine racing a seventy lap race! That is why, I presume, you are only required to race a minimum of between six and fourteen laps to qualify for championship points. It's enough, believe me! An average championship would probably take a good two hours, probably more. You can save a competition after any race and come back to it.

Just to give you an indication of my driving abilities, I have broken the lap records of all but two of the circuits, but have only finished about five times out of X races (where X is a large number that I lost count of a long time ago!), although I have finished first on three of those five completed races. On winning a race, you are treated to a picture of someone wearing a floral bouquet, spraying champagne everywhere and the sound of a cheering crowd.

In my opinion, this is the best racing car driving game around. I think it should be a compulsory upgrade from E-Type. Anyone who hasn't yet upgraded to version 2, should do so, because many of the small quirks of version 1 have been remedied. At around £19 + VAT from most regular suppliers or £23 from Archive, it provides endless hours of enjoyment and thrills. **A**

Pineapple Digitiser

Ned Abell

A digitiser is a very useful computing tool but it can also be expensive and Pineapple have done a good job in producing a product that's of good quality and yet reasonably affordable. The board comes as a full-width podule for the 300 and 400 series and there is an optional add-on box for the 3000 user to house the card.

Drop it!

Packed to survive being thrown from the roof of a multi-story block of flats, the carton contains a hard ring binder manual with two discs and a board which has a BNC video and 9 pin D socket on the back, together with three rotary knobs to control the brightness, colour and contrast of the input image. Internally, switches are used to pro-

vide video termination if required. The software provides several programs to capture an image that is fed into the podule, to treat it in a variety of ways and to store it on disc, as well as examples of grabbed images.

Storing pictures

One of the reasons that digitisers aren't cheap is that the boards contain quite large RAM stores which to hold the video image. Pressing a key grabs the video into this frame store and then it can then be changed by the machine's software. Herein lies the difference between the two versions of the Pineapple digitiser – the standard version digitises an image up to 512 pixels wide by 256 pixels high and with a "depth" of 12 bits whilst the extended version grabs to a "depth" of 16 bits.

This depth is a function of how well the computer turns the actual colour at a pixel point into a value of red, green or blue, using 4 bits for each colour at 12 bits resolution and, at 16 bits, 5 for red and green and 6 bits for blue. In practical terms, you aren't going to notice too much difference between depths but a higher resolution is going to be noticeable when you start to manipulate those images. You then need as much information as possible about each pixel point as you can get, to improve the image processing. The "565" option is the one to go for and the extended digitiser was used in this review.

Software commands

The software suite that comes with the podule provides a variety of commands for programmers to "meld" into their own routines through SWI and *calls.

- *Average – produces a higher quality image on stationary pictures*
- *Bits – sets the depth for the displayed image*
- *Digitise – transfers the stored picture to a shadow screen*
- *Flip – flips the image horizontally or vertically or both*
- *Focus – de-focuses the screen*
- *Freeze – allows 'grabs' of a single incoming frame*
- *Image – replaces, AND's or OR's the new image with an existing one*
- *Loadsprite – loads a sprite to the screen*
- *Loadvideo – loads a picture saved as a video file*
- *Moving – provides a "monitor" window showing the incoming video*
- *Negative – inverts any of the primary colours*
- *Noise – uses averaging techniques to remove noise lines*
- *Outline – a picture made from the video outlines*
- *Primary – can switch off incoming R, G or B or combinations thereof*
- *Savevideo – stores the image with specific sizes and bits*

For those of us who want to get on with it, there are some programs already written to provide the basics and to try out the new board but, as you

can see, the range of the commands is very impressive.

Demo discs

On the Pineapple demo discs, if you run the demonstration program called !mainkeys, the screen gives an image in the centre which is updated by the incoming video. There is a time lag between each update but this provides a very basic check of what is connected to the digitiser without the expense of another television "monitor". The controls on the podule can then be adjusted.

The best way of doing this is detailed in the manual – adjust the brightness until dark picture areas appear black and then to turn the contrast fully up and then reduce it until white areas stop "burning" and then adjust the colour to get good flesh tones. This set up is very important to get good pictures and some time spent at this stage is very worthwhile. Colour bars or a greyscale help.

Various key presses then access the software commands, for example <D> digitises the incoming video and <shift-S> saves the contents of the RAM as a sprite. There are other applications called !micci and !digitiser on the disc. !micci is a non-WIMP application that allows fairly comprehensive "point and drag" control of the digitiser and has details of an upgrade path to a more comprehensive windowing version of the software. My favourite, "!digitiser", works in the desktop to provide multi tasking menu control with function key grabs and saves. There is also control of image position and size and this is useful to video makers like myself who want to create sprites of objects in front of a camera to position on backgrounds of live video.

Video input

The BNC or 9 pin input means that you have to present video or RGB levels to the digitiser. Thus, a video output socket from a camera or tape machine is required. This often takes the form of a phono or RCA type socket, so an adaptor lead to BNC could be needed.

If you use a video recorder, its tuner can bring broadcast signals into the digitiser.

I tried both a professional VHS video recorder and a camera into the BNC socket to check on

both recorded images and live signals. Some of these captions are on the monthly disc in sparked format. I grabbed the cover of the November Archive so that you can compare the original with the sprites created through the system in different ways. I've also grabbed a couple of pictures to show how good the system can be in mode 24.

Verdict?

What's the verdict? Well, it just depends... The results that you will want will be different from those I have been looking for and so judgements are likely to be rather subjective. I wanted to grab images like logos in the highest possible quality, at the lowest cost, in colour, for editing by paint

packages and re-importing back into the computer to be used in "Presenter Story" as sprites in video production captions. The Pineapple Digitiser does this and I feel that the quality I get is very good for the price I paid. I'm impressed with a "565" grab of printed material in mode 24 and I have printed digitised images out through Impression and again the results are good but limited by my dot matrix printer. As I have a good camera, the cost of a digitiser is justified. This product does what I want it to do and it does it very well.

The prices are £285 +VAT for the standard version and £315 +VAT for the extended version. **A**

Return To Doom

Richard Forster

It always interests me how much help is given in the packing with adventure games. The two extremes, no help and comprehensive help, are about equally balanced in popularity of use but, unfortunately, a compromise between the two is rarely found. What I personally would like to see is a set of coded hints which, upon deciphering, would reveal cryptic advice. Failing this, I much prefer no hints at all because, temptation being what it is, many a good puzzle can be ruined by "a quick peep".

"Return to Doom" comes with two other adventure games, "Countdown to Doom" and "Philosophers Quest", and the first things I noticed upon opening the plastic case were three sets of hints. With just under 200 hints for the three games, you are unlikely to find yourself having to write to Topologika for help. To use the clues, you simply load in the correct game, type HELP and enter the number indicated in the hint list. Most of the clues are progressive, you get gentle nudging and are asked if you want more, which the program will obligingly give, telling you before it gives away the final solution.

I am sure this sort of help is actually welcomed by many people, and I definitely do not criticise Topologika for including them with the package. I would advise, however, hiding the help sheets

(or better still getting somebody else to hide them) before you start play.

As well as the hint sheets, there are several other bits of paper in the box. The games have only recently been brought out for the Archimedes and owners of other machines had to get the three adventures separately. Background for the latter two games are therefore supplied on separate pieces of card and there is also a separate Technical sheet on getting the games running.

Actual playing instructions are given once, as are the standard notes with adventure games. This was, surprisingly, the cause of my only problem. In "Philosopher's Quest", the only way to extinguish the lamp is the single word OFF. This was probably on the instruction sheet for the game when it was supplied on its own, but was not on the one for "Return to Doom" and I spent several minutes trying things like "TURN OFF LAMP" and even "OFF LAMP" before hitting on the correct phrase.

This was a shame, because the games have been written in such a way that you are not normally spending eons trying to get the wording right. The parser on all three is basically of the old verb-noun format, but performed perfectly with the one exception already mentioned. One verb curiously absent from the adventures was EXAMINE. The reason for this, as explained by the

insert card, is that the puzzles are not designed to be solved by "happening to discover things about the objects", but by object manipulation. You get all the necessary information about an object's appearance from its description when encountered, so it is not so much absent as automatically given.

All three adventures are on the same disc, which is protected, and upon loading, you are given a menu for selecting the three games. One curious feature was that they had to continually load data from the disk. This was surprising because the games have no graphics and, looking at the size of the files, even allowing for text compression, I could see no reason why it could not all be loaded at once. The game will run on all the Archimedes range, even a 305 without RISC-OS, so perhaps this is why.

The planet Doomawangara is the setting for two of the three adventures and these two adventures make up the first two parts of a trilogy. Doom, as it is affectionately known, is a strange place where you will find all kinds of climates, from glacier to desert, within a stone's throw of each other. The reason for this is not made clear until the next adventure and, for now, I can only imagine they exist so as to give home for the strange creatures and artifacts that litter the planet.

In "Countdown to Doom", you find yourself for the first time on the planet, having been shot down by Doom's automatic defence system. You have 400 moves to repair your ship and take off, before the corrosive atmosphere leaves you stranded for life in the planet's wilderness, although there are plenty of ways to go before all your hopes literally crumble away. The suicidal blob can still come as quite a shock, even to an adventurer who has braved the decapods and crossed the swamp.

As far as difficulty goes, this is probably about the easiest of the three games – it provides an accessible start and, while being full of original and logical puzzles, it only has a couple of really devious ones. The adventure, like the other two, contains several mazes, which are obviously a favourite of Peter Killworth, the game's author. Fortunately (or is it unfortunately?) they all

require different methods for solving and present intriguing, if difficult, obstacles.

"Return to Doom", the main adventure in the pack, puts you back on the infamous planet after you respond to a distress call sent by a kidnapped ambassador. If the first game was lonely, trekking about the planet in search of equipment and treasure, the second game certainly is not.

A little way into the game, you should find a robotic dog, Bonzo, the not-quite wonderdog in my case and, after that, things get a lot more hectic. At least this time you do not have to worry about the atmosphere's effect on your ship, although the weather may still be the cause of a scratched head or two.

The game is big, especially when you consider that almost every location is part of a puzzle and nearly half the hints are for this part alone. Several of the puzzles are solvable in different ways, although there is only one way of finally completing the game. By allowing this multiple choice, you should be able to explore the majority of the landscape even if the best solutions for some puzzles elude you. Reading the text carefully should help, as there are a lot of subtle clues hidden there.

"Philosopher's Quest" is set in a network of caves and is basically in the "find the treasure" genre. What the game misses in terms of the plot it more than adequately makes up for with the puzzles and it contains, under one roof, some of the best ones ever devised for an adventure game. It is also the hardest of the three games and it may take some time to be able to start your quest in earnest.

Exploration is the key – searching around the caves, you should come up with all manner of mysterious items and places; from a solicitor's office to a strong piece of gorgonzola, which could easily be the death of you. Journeying south a bit reveals a long beach, near where you should discover an old lady who has lost her dog, and a sunken wreck with a depressed squid. If you explore a more easterly direction, you can find the garden of Eden, the tower of Babel and you may be forced to prove your very existence.

There is even an ancient mariner with a story to tell and, like the wedding guest in Coleridge's poem, you will find yourself engrossed until you are left in the dark.

Two of the games "Philosopher's Quest" and "Countdown to Doom" were originally brought out by Acornsoft in the early 80's. The versions here are expanded and are about 50% bigger than the originals. Some of the puzzles are more complex and involved, and there are many new ones scattered about the new locations. Even if you have played them on the old BBC versions, they are still excellent adventures and the new puzzles in them should keep you going for quite a while.

Overall, the compilation is excellent value for money, with not just one but three excellent adventure games. They are, in my opinion, the best adventure games available at the moment for the Archimedes. The fact they are on a compilation disk might seem to indicate that individually they are not strong enough. This is definitely not the case and the disk is worth purchasing for "Return to Doom" alone. The quality, and even quantity, of the puzzles is superb, and I would recommend the adventures to anybody. The only thing they lack is graphics, which some people may miss, although this should not be cause to reject this trio of adventures. **A**

Escape from Exeria

Richard Forster

When I first received a copy of "Escape from Exeria", it consisted solely of a crude arcade game. Since then the game has improved slightly and the disc also contains a follow-up game, "Return to Exeria", and two mini adventures, "The Sacred Pyramid" and "The Purple Crystal of the Heavens". The arcade games run directly from the desktop and contain adequate instructions on the disc. The adventures run from the BBC emulator and the least said about them the better. They both gave the appearance of being unfinished, consisted of a couple of puzzles between them and the most atmospheric part of the games was their titles.

"Escape from Exeria" is simply a 'Pacman' like maze game. You move "Ilth", the hero of the two arcade games, through the various levels of Exeria's cavern system, trying to collect coloured crystals while avoiding the guardians. After collecting all of the crystals of a certain colour, access to previously inaccessible areas becomes possible and, after gaining all four sets of crystals on a level, you can head for the exit. As might be expected, contact with the afore-mentioned guardians is deadly but, fortunately for the player, they follow set paths.

The graphics in the game are simple and there is a small amount of sound used when you collect

items or pass onto the next level. The game can be played a couple of times but after this, tedium sets in. There are 40 screens to try out (and you can skip by pressing I, L, T and H simultaneously), but after seeing level 18, I had had enough.

"Return to Exeria" is slightly better because a problem solving element has been added. Ilth is now able to move boulders along in an attempt to plug holes and gain access to the crystals and there are various special squares which force movement in various directions or act as teleports. The guardians are back too, though not until several levels into the game and you are now also up against the clock.

The game is far more playable than the first and, by the time the guardians were appearing, the game was becoming quite challenging. The graphics and sound are again simple but it mattered far less because the game itself had more to offer. As a bonus, you also get a screen designer with it which was easy to use.

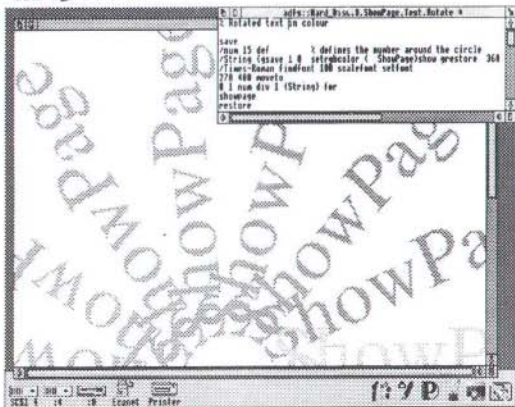
Overall, neither of the games (I'm trying to forget about the adventures) are up to the quality of most Archimedes software. The cost of the package, however, is similar to most shareware and public domain software and, as such, is quite reasonably priced.

Escape from Exeria is available from Soft Rock Software for £3.45. **A**

ShowPage

ShowPage supports the colour extensions and can create a sprite file of any required size. It can therefore be used to incorporate PostScript graphics into other RISC OS applications. It uses the RISC OS outline fonts, rather than the conventional PostScript fonts, for all

£149+VAT



Package includes a spiral bound manual detailing the ShowPage version of the language. 320 page PostScript language reference manual by Adobe. 240 page PostScript language tutorial manual by Adobe. Discs containing ShowPage and example programs. AvantG, BookM, Pembroke RISC OS outline fonts.

the Archimedes

An equation building tool that complements many RISC OS applications, in particular DTP and word processor programs such as Impression and Impression Junior.

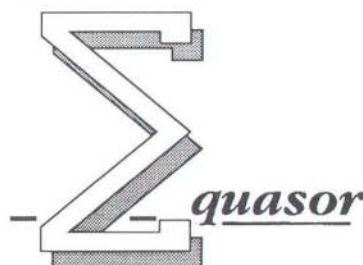
Many users of the Archimedes have a need to include complex mathematical formulae or equations into documents. Equasor allows equations to be built up on screen, graphically, from their component parts. Using the Acorn outline font system it presents a totally accurate view of the final equation at all times.

It simplifies the building of equations by presenting palettes of symbols, functions and operators which can be selected just by clicking with the mouse. It intelligently scales and re-sizes features such as summation symbols, brackets, and square roots as the equation is edited so they are always the right size.

Once the equation has been created it can be saved or exported to any number of compatible RISC OS applications. In DTP packages it can be dropped into frames just like any other drawing where it can then be scaled and positioned as required.

When used in conjunction with Impression II, it can take advantage of the latter's embedded frame capability to embed

equations into the text, even on the line. Once embedded in this way, the equation will then flow with the text as part of the text.

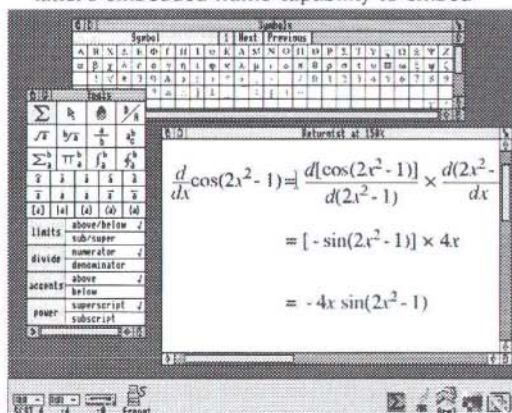


Features:

Multi-tasking RISC OS application. Supports direct in-memory transfer of equations for the fastest, simplest integration with other RISC OS applications. Any number of equations can be handled at the same time. Equations can be viewed and edited at any scale. Saves equations as Drawfiles compatible with all applications that support this format. Supports multiple different RISC OS outline fonts and so is not limited to the Math/Greek font supplied.

- Supports region selection and cut, copy, paste between equations and documents.
- Styles for global control over fonts, size, spacing etc. of variables and operators. Effects give additional control over the appearance of individual parts of an equation.
- Small, compact program perfectly suitable for 1 Mbyte machines.

Package includes a 60 page spiral bound manual with detailed tutorial reference, and index. Discs include the program, example equations, and Math/Greek outline font.



£49+VAT



Computer Concepts Ltd

Gaddesden Place • Hemel Hempstead • Herts • HP2 6EX • Tel. 0442 63933 • Fax 0442 231632.

Two ARM Assembler Utilities

Martin Avison

When writing and testing any program it is very useful to be able to follow the execution path through the program. This facility is provided in BASIC by the TRACE facility, which will display the statement number being executed. It is also easy in BASIC to insert extra PRINT statements so that the flow can be seen and variables displayed.

These problems exist also when you are writing assembler programs, with the added difficulty that assembler programs can easily loop or overwrite unintended bits of storage, often locking up the computer completely with no clues where it is. In assembler, there is no TRACE facility and although SWI calls can be inserted to display characters or strings, the insertion can cause the program to change its behaviour due to register corruption. Breakpoints can be inserted using *BreakSet but these are limited and slow the program down.

BASIC function for assembler debugging

My solution to this was to write a BASIC function which generates assembler code to enable trace entries to be easily inserted at any point in an assembler program. All that is needed is to insert

```
FNdebug("This is a message") :
```

This will generate code to print the message from the parameter to identify the location and then provide a full register list, plus the flag values and then return to the program under test with all registers and flags unchanged. The debug functions can be left in the source and turned on and off for any assembly simply by setting debug to TRUE or FALSE. The code will run in User mode and also in Supervisor mode.

There is obviously some storage overhead when running with debug, which is about 300 bytes for code, which is included only once, and 13 bytes plus the length of the message for each FNdebug included in the program. It also slows the code down but you normally need to slow it down

much further with <ctrl-shift> to read the debug information!

The debug function is fully documented and it needs only 2 variables set before it can be used: opt should be set to the assembler OPT value and debug should be set to TRUE to generate debug code or FALSE to omit it. Note that there must also be, included in the program,

```
FNdebug("Debug_Init") :
```

This will generate the common code if debug is TRUE. It should be placed after the end of the executable code. After assembly, you can use CALL showregs to obtain a register list at any time from BASIC.

The sample program DemoDebug includes the function as a LIBRARY, then assembles a short routine either with or without the debug facility, then CALLs the routine. Run the program first to see what the assembler program does (don't get too exited!) then change line 40 to debug = TRUE and RUN the program again to see the debug function in action.

```
10 REM > DemoDebug
20 PRINT "DemoDebug : Demonstration
      of FNdebug      Version 4
      Martin Avison"
30
40 debug = FALSE      :REM <<<<
      change to TRUE to enable
      debug function

50 asmprint= FALSE
60 A% = 6
70 PROCassem
80 CALL code%
90 END
100
110 DEF PROCassem
120 LIBRARY "AsmDebug"
130 codelen% = 1000
140 DIM code% codelen%
150
160 FOR opt= %1000 TO %1010 + ABS
    (asmprint) STEP 2 + ABS(asmprint)
170
180 P% = code%
```

```

190 L% = P% + codelen%
200
210 [OPT opt
220     FNdebug("Start of code")
230 STMFD R13!,{r0-r9 ,R14}
        \ save registers
240     FNdebug("after register
        store")
250 MOV   R3,R0      \ store A% in r3
260 SWI   "OS_WriteS" \ display
        message
270 EQU   "Demo":EQUB 0:ALIGN
280 SWI   "OS_NewLine"
290     FNdebug("before loop")
300 .loop
310 MOV   R0,R3      \ put counter in R0
320 ADR   R1,buffer  \ address buffer
330 MOV   R2,#9      \ set buffer length
340     FNdebug("before conversion")
350 SWI   "OS_ConvertInteger1" \
        convert r0 and ..
360     FNdebug("after conversion")
370 SWI   "OS_Write0" \ output
        counter
380 SWI   "OS_NewLine"
390 SUBS  R3,R3,#1    \ decrement
        counter
400     FNdebug("end of loop?")
410 BNE   loop       \ go output next one
420
430 LDMFD R13!,{r0-r9 ,R14}
        \ restore registers
440     FNdebug("About to return from
        code")
450 MOV   PC,R14     \ return to BASIC
460
470 .buffer EQU 0:EQU 0:EQU 0
        \ store for conversions
480 FNdebug("Debug_Init")
        \ initialise debug
490 ]
500 NEXT
510 ENDPROC

10 REM > AsmDebug
    Version 11 by Martin Avison
20
30 DEF FNdebug(message$)
40 IF debug = FALSE THEN . = 0
50 IF message$="Debug_Init" THEN
60 REM create common code to
    display registers
70 [OPT opt:ALIGN \ assemble
    common routine
80 .showregs      \ routine for
    CALL if required
90 STMFD R13!,{r0-r15 } \ save
    all registers
100 SWI   "OS_WriteS" \ display
    message
110 EQU   "Register List":EQUB 0:
    ALIGN
120 BL    displayregs \ display
    registers
130 MOV   PC,R14     \ return
140 \-----
150 .displayregs \ display registers
    subroutine
160 MOV   R9,R14     \ store return
    address
170 LDR   R0,[R13,#13*4] \ get
    stored stack ptr R13 ..
180 ADD   R0,R0,#16*4 \ and subtract
    16*4 to ..
190 STR   R0,[R13,#13*4] \ put it
    back to original
200 SWI   "OS_NewLine"
210 MOV   R3,#0      \ r3 is register
    counter
220 .nextregister
230 CMP   R3,#10     \ if register < 10
240 SWILT 256+ASC" " \ output
    blank first
250 ADR   R1,buffer  \ address buffer
260 MOV   R2,#9      \ set buffer
    length
270 MOV   R0,R3      \ put register
    no in R0
280 SWI   "OS_ConvertInteger1"
    \ convert and ..
290 SWI   "OS_Write0" \ output
    register no.
300 SWI   256+ASC"="
310 ADR   R1,buffer  \ address buffer
320 MOV   R2,#9      \ set buffer length
330 LDR   R0,[R13,R3,LSL#2] \ get
    register value ..
340 SWI   "OS_ConvertHex8" \ convert
    it ..
350 SWI   "OS_Write0" \ and output
360 CMP   R3,#5      \ if after reg 5
370 CMPNE R3,#11     \ or reg 11 ..
380 SWIEQ "OS_NewLine" \ force newline

```

Two ARM Assembler Utilities

[illegible]

BASIC function for assembler register using/drop

When writing assembler code, it is much better to use variable names instead of register numbers. This is a great aid to documentation and gives some chance of understanding the code when the inevitable time comes to change it.

However, whether variable names or register numbers are used, it is often very difficult to keep track of which registers are being used for what. It seems to be a fundamental law of computing that, however many registers you have, you always seem to need at least one more. This

inevitably leads to using a register for several things, which in turn leads to using a register for two things at the same time. This confuses the computer and, more so, the programmer until the error is found! This is a very common cause of strange errors in assembler code which can be very difficult to find.

What is needed is for the assembler to keep track of register usage but, unfortunately, it does not. However, due to the brilliant integration with BASIC, it is fairly easy to add this facility.

Three functions have been written, for inclusion within assembler source:

FNureg, has to be inserted into the source code before it is required to use a particular register. The register number, the variable name required and a description of its use are passed as parameters. If the register is already in use, a warning message is given. The variable, which can be either an Integer or a Real variable, can then subsequently be used in the source code instead of the register number.

FNdreg, which is used to drop a register when its use for an item is complete. The register number and its variable name are passed as parameters and checked to ensure they are what is being used. If the variable name is subsequently used, the assembler will error, as it will be set to -1.

FNlreg, can be used at any time to display a list of registers in use, with their variable names and descriptions.

Two PROCedures have been defined also:

PROCireg, which is for initialisation. It is for inclusion in the BASIC source, but within the FOR..NEXT loop for the assembly after opt has been set to the OPT value. This procedure on the first pass of the assembler creates two arrays used to store the variable names and description, and uses PROCasmfindvar to assemble a small machine code routine. It then initialises the arrays with any common register uses of your choice.

PROCasmfindvar assembles code to find the address and type of any BASIC variable, which may be of use for other purposes. If the variable cannot be found, one is created, unless it cannot be a variable name, when an error is raised.

The sample program DemoUsing includes these facilities as a LIBRARY and produces some warning messages when run.

```

10 REM > DemoUsing
20 PRINT "DemoUsing : Demonstration
      of Register Functions
      Version 4  Martin Avison"

30
40 @% = &90A
50 asmprint= FALSE
60 A%      = 6
70 PROCassem
80 CALL code%
90 END
100
110 DEF PROCassem
120 LIBRARY "AsmUsing"
130 codelen% = 1000
140 DIM code% codelen%
150
160 FOR opt= %1000 TO %1010+
      ABS(asmprint) STEP 2+ABS(asmprint)
170
180 P% = code%
190 L% = P% + codelen%
200
210 PROCireg(opt)
220 [OPT opt
230   FNureg( 3,"counter","holds
                        value of count")
240   FNureg( 0,"a%"    ,"A% from
                        CALL")
250   FNureg( 6,"integer%", "some
                        integer")
260 \ FNureg( 4,"%Q"      ,"invalid
                        variable error")
261 \ FNureg( 4,"a$"      ,"string
                        error")
270 STMFD (stack)!,{r0-r9,link}
                        \ save registers
280 MOV   counter,a% \ store A% in
                        r3
290 SWI   "OS_WriteS \ display
                        message
300 EQU   "Demo":EQU   0:ALIGN
310 SWI   "OS_NewLine"
320   FNdreg( 0,"a%")
330   FNureg( 0,"num"   ,"number")
340   FNureg( 1,"buf"   ,"buffer
                        address")
350   FNureg( 2,"len"   ,"buffer
                        length")

```

Two ARM Assembler Utilities

```

360 .loop
370 MOV    num,counter    \ put counter
                           in R0
380 ADR    buf,buffer \address buffer
390 MOV    len,#9 \ set buffer length
400 SWI     "OS_ConvertInteger1"
                           \ convert r0 and ..
410 SWI     "OS_Write0" \ output
                           counter
420 SWI     "OS_NewLine"
430 SUBS    counter,counter,#1
                           \ decrement counter
440 BNE     loop \ go output next one
450 FNDreg( 3,"none" )
460 FNDreg( 5,"none" )
470 FNureg( 3,"level","some other
                           value")
480 FNureg(14,"temp" ,"temp use of
                           link")
490 FNLreg
500
510 LDMFD (stack)!,{r0-r9 ,link}
                           \ restore registers
520 MOV     PC,link \ return to BASIC
530
540 .buffer EQU 0:EQU 0:EQU 0
                           \ store for conversions
550 ]
560 NEXT
570 ENDPROC

10 REM > AsmUsing      Version 12 by
                           Martin Avison
20
30 DEF PROCireg(opt):REM Initialise
                           registers etc
40 IF opt AND 2 THEN
50     regn$() = "" :REM clear for
                           second pass
60     regd$() = ""
70 ELSE
80     PROCasmfindvar :REM first pass
                           so initialise
90     DIM regn$(15),regd$(15) :REM
                           arrays for name and
                           description
100    DIM rnam% 30 :REM buffer for
                           name
110 ENDIF
120 REM set up standard registers as
                           required :

130 Z%=FNureg(13,"stack","Stack
                           Pointer")
140 Z%=FNureg(14,"link" ,"Link
                           Register")
150 Z%=FNureg(15,"pc" ,"Program
                           Counter")
160 ENDPROC
170
180 DEF FNureg(regn%,regn$,regd$)
                           :REM Use Register
190 IF regn$(regn%) = "" THEN
200     regn$(regn%) = regn$
210     regd$(regn%) = regd$
220 ELSE
230     PROCereg("Using",regn%,regn$,
                           regd$)
240 ENDIF
250 PROCsreg(regn%,regn$,regd$)
260 =0
270
280 DEF FNDreg(regn%,regn$) :REM
                           Drop Register Usage
290 IF regn$(regn%) = regn$ THEN
300     regn$(regn%) = ""
310     regd$(regn%) = ""
320 ELSE
330     PROCereg("Drop ",regn%,regn$,
                           "")
340 ENDIF
350 PROCsreg(-1,regn$,"")
360 =0
370
380 DEF PROCsreg(regn%,regn$,regd$)
                           :REM Store Register Usage
390 LOCAL addr%,type%
400 $rnam% = regn$
410 CALL findvar,rnam%,addr%,type%
420 type% = type% AND &FF
430 CASE type% OF
440     WHEN 4 : !addr% = regn%
450     WHEN 5 : |addr% = regn%
460     OTHERWISE ERROR 999,regn$+
                           " invalid type "+STR$(type%)
470 ENDCASE
480 ENDPROC
490
500 DEF PROCereg(type$,regn%,regn$,
                           regd$) :REM List Error on
                           1st pass or list
510 IF (opt AND 2)=0 OR (opt AND 1)
                           THEN

```

```

520 PRINT "type$ " Error for R";
    regn$ TAB(20) ": " regn$ TAB(40)
        ": " regd$ "Currently ";
530 IF regn$(regn$) = "" PRINT
    "Unused" ELSE PRINT "used by"
        TAB(20) ": " regn$(regn$)
        TAB(40) ": " regd$(regn$)
540 ENDIF
550 ENDPROC
560
570 DEF FNlreg :REM List Register
        Usage on 2nd pass
580 LOCAL I%
590 IF opt AND 2 THEN
600 PRINT "Current register usage
        : "
610 FOR I%=0 TO 15
620 IF regn$(I%) <> "" PRINT
    TAB(10) "R"; I% TAB(20) ": " regn$
    (I%) TAB(40) ": " regd$(I%)
630 NEXT
640 ENDIF
650 =0
660
670 DEF PROCasmfindvar :REM assemble
        lvblnk routine
680 LOCAL code%, codesize%, P%, L%,
    opt, addr, ptr1, create,
    lvblnk, type, parms,
    ptr2, stack, link
690 codesize%= 180
700 DIM code% codesize%
710 addr = 0
720 ptr1 = 6
730 create = 5
740 lvblnk = 7
750 type = 9
760 parms = 9
770 ptr2 = 11
780 stack = 13
790 link = 14
800
810 FOR opt=8 TO 10 STEP 2
820 P%=code%
830 L%=code%+codesize%
840 [OPT opt
850 .findvar
860 STMFD (stack)!,{parms,link}
        \ store registers
870
880 \ first try to find variable ..
890 LDR ptr2,[parms,#16] \ get
    ptr to string info block
900 LDR ptr2,[ptr2] \ get ptr
    to start of variable name
910
920 ADD lvblnk,link,#&3C \ get
    addr of BASIC lvblnk routine
930
940 MOV link,PC \ set return
    address
950 MOV PC,lvblnk \ call routine
    to find variable
960 BCS error \ exit if
    illegal name
970 BNE exit \ exit if
    variable found
980
990 \ otherwise need to create
    variable ..
1000 LDR link,[stack,#4]
    \ retrieve link register
1010 ADD create,link,#&40 \ get
    addr of BASIC create routine
1020 MOV link,PC \ set return
    address
1030 MOV PC,create \ call routine
    to create variable
1040 ORR type,type,#&1<<9
    \ indicate created
1050
1060 .exit
1070 LDMFD (stack)!,{ptr1} \ get
    parm pointer
1080 LDR ptr2,[ptr1,#00] \ get
    addr of type%
1090 STR type,[ptr2] \ and store
    value
1100 LDR ptr2,[ptr1,#08] \ get
    addr of addr%
1110 STR addr,[ptr2] \ and store
    value
1120 LDMFD (stack)!,{pc} \ and
    return to BASIC
1130
1140 .error
1150 LDMFD (stack)!,{ptr1} \ get
    parm pointer back
1160 LDR ptr2,[ptr1,#16] \ get
    ptr to string info block
1170 LDR ptr2,[ptr2] \ get ptr
    to start of variable name

```

1180 ADR	R1,errv	\ address	1250 ADR	R0,errmsg	\ address
		output variable name			error message
1190 .error1			1260 SWI	"OS_GenerateError"	
1200 LDRB	R0,[ptr2],#1	\ get char			\ and generate error
		of variable name	1270 .errmsg		
1210 CMP	R0,#&D	\ at end yet?	1280 EQU	999	
1220 MOVEQ	R0,#0	\ if at end,	1290 EQU	"Invalid variable name "	
		replace char with zero	1300 .errv		
1230 STRB	R0,[R1],#1	\ store char	1310 EQU	STRING\$(30,"?")	
		of variable name	1320 EQU	0	
1240 BNE	error1	\ if not end,	1330]		
		go get next char	1340 NEXT		
			1350 ENDPROC	A	

'Tools' – Graphics Library

Peter Clements

Having, myself, painted a mode 15 picture of some woodworking tools, I was very interested to see what 'Micro Studio' had come up with in their latest addition to their Graphics Library. Following in the footsteps of 'World Wildlife', 'Prehistoric Animals', 'History' and several other titles, comes 'Tools'. The single disc is packaged in a sturdy plastic library case which I feel is somewhat larger than necessary.

Don't be put off by the misspelt quotation on the cover by Benjamin Franklin which states that "Man is a TOOmaking animal", the disc is absolutely crammed full of the most intricate !Drawfile clip art that I have ever seen. The quality of the drawing really has to be seen and my congratulations go to the artist who must have spent an eternity in compiling the set.

A total of nearly two hundred images are on the disc and range from hammers and brushes to simple nuts and bolts and power tools. Clicking on the Hammers file for example, reveals yet more varieties most of which I have heard of but couldn't positively identify until now.

An index is provided in the form of an !Edit file. This not only lists the range of tools available but also gives a brief description of their usage and purpose.

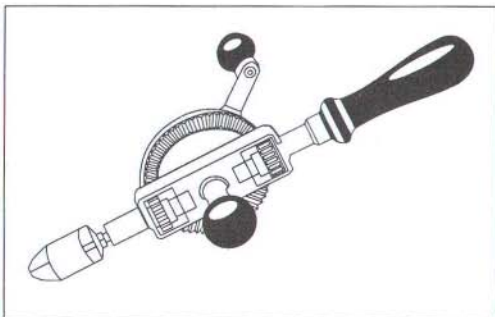
A novel feature included in the package is one which lets the user choose from three different types of drawn hand. These are 'clenched', 'fist'

and 'hand'. If one of these images is loaded into !Draw, the fingers and thumb can be separated from the main outline. A tool can then be loaded, positioned against the outline of the hand and the fingers moved back into position. This all works rather well and is a useful addition to the package. If the scale looks a little wrong then either the hand or the tool can be enlarged, reduced or rotated to fit.

The images reproduced superbly on my nine pin dot matrix printer even when I attempted to scale them down to a really minute size.

I think this package will find itself being used mainly in schools and colleges and maybe some small businesses perhaps for letterhead design. Whatever the case, it's a well thought out and expertly drawn library of clip art and is well worth the asking price.

Graphics Library Pack from Micro Studio, price £19.95 or £18 through Archive. **A**



Draw Format Clip Art

Charles Constantine

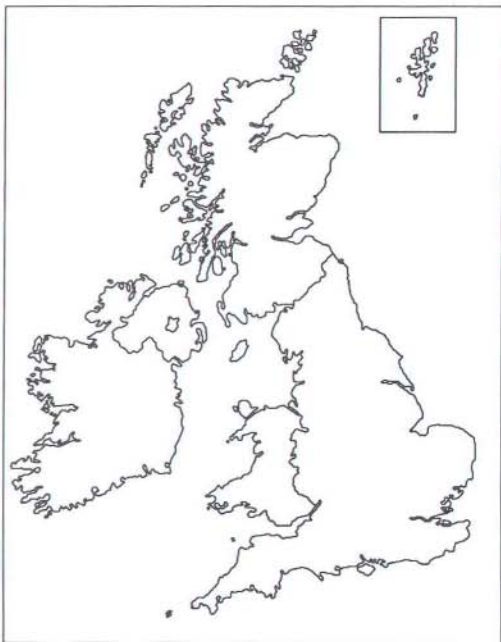
Clip art is a useful source of illustrations, especially for use with desk top publishing. There are several Public Domain sources (including Shareware/Careware), but many are in Sprite format. The big advantage of Draw format is that the images can be reproduced at the maximum resolution of the output device and they occupy much less file and memory space than equivalent sprites.

Draw Format Clip Art, Set one, from Midnight Graphics consists of five full discs of Draw images and a sixth disc containing an application !Viewer. The cost is £29.95 plus VAT.

!Viewer operates in a similar way to !Display on Shareware 26, but installs itself on the icon bar. Draw files can be rapidly viewed in a small window by dragging them from a directory viewer. Up to 255 images can be held in memory and instantly re-displayed by clicking in the !Viewer directory window.

The five clip art discs hold 466 Draw files in 21 directories. There is some repetition of similar subjects (e.g. Arrows and Phones) and two drawn fonts have a separate file for every character. However, the total collection is very comprehen-

sive with directories covering Animals, Borders, Food, Maps, People and Shapes together with six 'Miscellaneous' directories. **A**



Graphics Libraries

Doug Weller

Now that DTP has become firmly established as a major use for the Archimedes, software houses are producing packs of sprites and !Draw files with particular themes.

MicroStudio

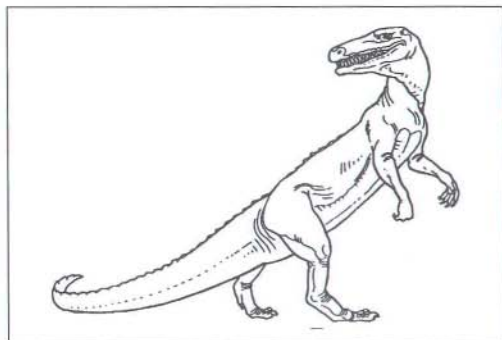
MicroStudio was a major producer of graphics for the BBC, so it is not surprising to find it in the forefront of graphics library suppliers for the Archimedes. Starting with some general graphics packs in both Draw and sprite format and some excellent !Draw maps, its catalogue now includes a wide variety of packages covering various themes in a mixture of Draw and sprite files. Its

catalogue includes a decorated alphabet, tools, packs for illustrators and designers, a science pack, business, schools, children's, nature, transport, media and photos (and probably more by the time you read this!)

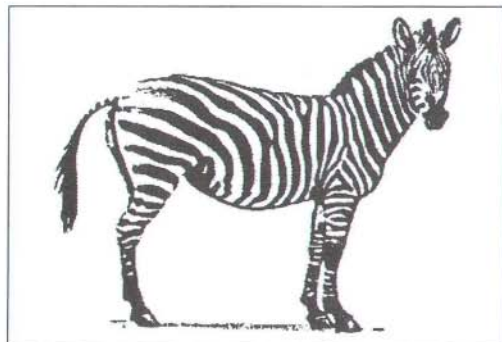
Dinosaurs, costume and wildlife

I have looked at V.1 of their packages covering dinosaurs, wildlife and historic costume. These come on 1, 2 and 3 discs respectively, and except for the wildlife discs, the discs consist of a set of arced files plus !Sparkplug and instructions for de-archiving. Each disc includes an index which details the content of the discs plus a bit of information about the picture, e.g. in the case of the wildlife pack, the creature's country of origin.

These packs are sprites only, although future versions will include more !Draw files, which I am told by another user who has seen an early version of a dinosaur, are excellent. They look very useful and generally well done, although one or two of the costume figures appeared to have small bits cut off.



I wasn't sure how the selections were compiled and although I was impressed by the width in each category, I was also slightly disappointed. This may be because I was looking at these too narrowly as a junior school teacher, looking for sprites covering areas I have been or may be teaching. Thus I was disappointed to find neither a badger nor a beaver in the wildlife library – if my class was looking at animal habitats, I would certainly want pictures of both of these. Similarly,

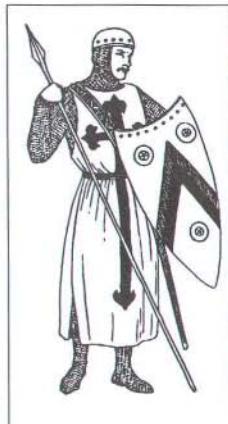


I was surprised to find no Viking costumes, as this is a common subject in Junior schools (and is now required by the National Curriculum). I know their clothes weren't that different from Anglo-Saxon and perhaps they were like the

Teutonic costume on the disc – but I'm not an expert on costume and would like some clearly labelled Viking figures! (I know that the Vikings didn't have wings on their helmets, so before I would use the Teutonic figures, who do have winged helmets, I'd have to do some research into their accuracy!)

Covering the National Curriculum?

Having said this, the history disc with 58 files does cover middle-Eastern and European history fairly well; I look forward to a complementary package on historical costume from other arts of the world. (Following the National Curriculum, we're doing Mayans next year, and maybe the Indus valley next, Micro-Studio!). Compilers of graphics libraries who want to sell to education would do well to look at the National Curriculum covering the relevant subject.



A tip for looking at sprites

If you want to look at a collection of sprites, don't simply click on them! Although this often works, it doesn't always show the entire sprite. I have only just discovered this – probably because, until recently, I never had any sprites that weren't completely displayed by simply clicking on them. The easiest way to see them is probably *not* by using !Paint but by loading them into a DTP package, where you can easily resize them, etc.

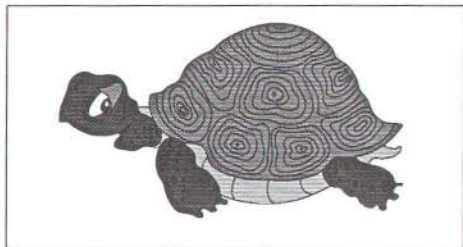
Summary

With those caveats, these are excellent packages and Micro-Studio wouldn't have to make many changes to cover the national curriculum (and of course they are looking toward a wider market anyway). At £19.95 (the introductory price for these packs) they are well worth the price. If they go up to the £29.95 of some of the other Micro-Studio packs, they are probably still decent value but may be getting more than most schools can afford. **A**

Draw Format Line Art N° 1

John Jefferies

This is the first of a series of draw format lineart discs that Southern Printers are planning to produce. There is not as much draw format lineart available as there is sprite format artwork. This is probably because it takes rather longer to prepare and it isn't as easy to transfer to Draw format from other computers' formats, so it's not so easy to tap into huge banks of artwork already prepared for the Ataris, Amigas and PC's of this world. The advantages of using draw format instead of



sprite should, presumably, be fairly obvious. Firstly, the size of the files is somewhat less and, secondly, the resolution and quality of the output is only limited by the printer not the pixel size of the sprite. Also, draw lineart can be scaled and rotated much more easily and effectively than sprite files and the "stepped edges" associated with scaled sprites can be largely avoided.

The lineart occupies all the capacity of the 800k disc apart from a couple of readme files, one explaining the copyright situation and the other giving an introduction to the contents and use of the disc. However, the files are not compacted.

The actual lineart is divided up into four directories: Animals, People, Transport and Others.

Animals

The animals are all fairly stylised and cartoon-like (e.g. the tortoise above). The contents list is: Bear, Bunny, Dog, Elephant, Fox, Frog, Goat, Panda, Piggy, PigSad, Pony, Seal, Tortoise and Toucan.

People

People provides Clown, Cowboy, Lady (Eastern), Pirate, Santa-1, Santa-2, Witch-1 and Witch-2. Again, these are fairly stylised and cartoon-like.

Transport

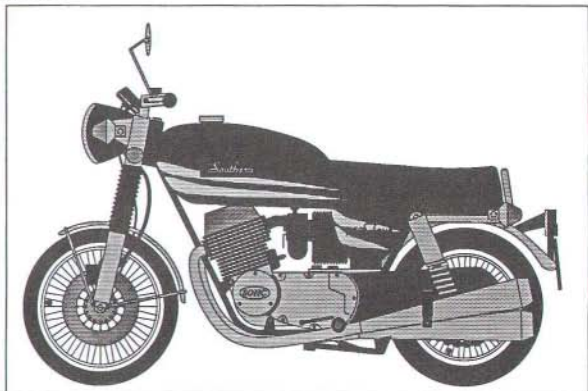
Transport consists of: Bike, Car, Lorry-1, Lorry-2, OldCar and Traction. These contain a lot more detail than some of the others – especially the motorbike shown below which is a 62K file.

Others

The final directory contains a number of smaller files and also the largest file of all. The file list is: Balloons, Clock (a very nice carriage clock), Flag-1, Flag-2, Holly (useful at Christmas), Look, Scroll-1, Scroll-2 and Tulips. This group contains the poorest examples (the scrolls) and the biggest file of all (108K) which consists of the word "Look" where the O's are a pair of (female?) eyes drawn with incredible detail.

Conclusion

For £5.50, you can't say that it's not value for money – well, it is if you want lineart on any of the subjects mentioned. It looks to me as if it has been prepared by (at least) two people – one with good technical skill, as the motorbike and other transport shows, and one with a very characteristic drawing style which is common to the people and animals. Overall, a good disc – it will be interesting to see the sequel(s). **A**



Careware N° 10

Ashley Bowden

The programs on this disc include three educational games and a number of other puzzles plus a bridge hand lister. The educational games are described first but note that they are 'archived' on the disc. This means that you have to use the !SparkPlug utility (supplied) to decompress them. Note also that they start off as 186K when archived and turn into about 925K after decompression, so more than one floppy disc is needed.

!Starmath

This game tests the user's capabilities at mental arithmetic. An extra-terrestrial flavour is created by the use of spacecraft, missiles and a starry backdrop. You choose which of the mathematical operations (+, -, x, /) you want to use, a level of difficulty and a speed. The lower two levels are quite easy but the highest, level 3, is not. Well, not unless you are the sort of person who can divide 783 by 29 in your head in less than about two seconds. The graphics, sound and animation are very good if, perhaps, a trifle over elaborate. None of the educational games are RISC-OS multitasking applications but are Desktop compatible, in that they can be run from and that they return to the Desktop.

!Magic

This is a word-game essentially the same as hangman. There are levels of difficulty which dictate how many wrong attempts you are allowed for each word and a scoring system which takes account of how quickly you guess the word. The graphics are quite nice and, all in all, this is a playable, if rather standard, game.

!Quizland

In !Quizland, you have to find your way out of a maze avoiding hazards and answering general knowledge questions to help you along. You can choose the theme of the questions: Science, Maths, English, History, Geography or a mixture. Getting a question correct has no beneficial effect as such, it just stops your 'vital force' decreasing. If this reaches zero before you get out of the maze then you lose. Serpents and a strange bubble

appear from time to time with the object of making life difficult. However, it seems that if you get most of the questions correct, you will get out since the maze is not too large. The game is rather slow moving, because the author wishes to show off her/his programming talents which one must, in fairness, admit are considerable.

The Puzzles

There is a set of six logical puzzles all by the same author which are based on related ideas. All have pieces which are placed on some sort of board (in two or three dimensions) subject to various rules. For example, one puzzle is to place eight queens on a chessboard so that none is attacking another. Another involves arranging 27 coloured cubes in a 3 x 3 x 3 pattern so that each row and column contains exactly one of the three available colours. Three of the puzzles use square tiles divided into quarters by diagonal lines. The quarters are coloured and the pieces have to be placed on the board so that adjoining edges are the same colour (and match the edge of the board or fulfil some other condition.) The puzzles have a unified feel to them and each uses the mouse and pointer in a similar way. What is more, each game has a second version where the computer solves the problem. This seems to involve an exhaustive search of the possible positions and can take several minutes but it is a useful addition. If you like this sort of puzzle then the collection is recommended.

!Rubik

This is a computer representation of a Rubik cube. It can be scrambled and unscrambled by the computer or you can do it yourself. Little more can be asked of such a program.

!Bridget

This program lists bridge hands. These are stored in an !Edit file. There are no colours or graphics just numbers and letters such as 7S. The hands may be particularly interesting or illustrative but I have only a slight knowledge of the game and am not in a position to judge.

ISolitaire

This is the only multi-tasking application on the disc. There are in fact two versions of the game available. Traditional solitaire involves beads jumping over others (draught style) until only one remains. 'Colotaire' involves beads of six different colours which have to be removed in a predetermined order. Both versions have a play-back option so you can see where things went

wrong. They also have some rather insane variants. There is 'blind' where all the pieces are invisible, 'ghost' where pieces which have moved but are still in the game become invisible and the aptly named 'daft' where pieces which have been removed are still visible when they should not be! All is, of course, controlled by mouse and menus in the proper way and it is great fun. **A**

Simple Measurement and Control

Jim Markland

Some months ago I wanted to write software to enable real time transposition for a MIDI music keyboard and my experiences of that and other interfacing projects may, hopefully, be of help to others wanting to do some simple control and measurement on the Archimedes.

When I started my MIDI project, I decided to acquire an Acorn I/O card for our A310 with MIDI upgrades rather than a pure MIDI card. This was in order to leave open the possibility of future simple control applications.

Was this a wise decision?

There were deep feelings of shock horror when the I/O card and documentation arrived. The manual is very perfunctory and the 1MHz Bus application note is several orders of magnitude worse. The manual appears to assume that the reader has served an electronic apprenticeship, having first been weaned on a BBC Micro. This is not me. To begin to remedy this, I have had to go back to the BBC Micro User Guide and the Advanced User Guide which, luckily, I have been able to locate in our library. This really should not have been necessary.

Further pangs of anxiety were experienced when I observed the public health warning which goes with the MIDI upgrade for the card. Under certain conditions it does not, reputedly, behave as well as the regular MIDI only podule; nor does it have a Thru Port. To discover these I had to make the investment! I also learned that the I/O card exhibits some minor differences from the original BBC Micro specification. Fortunately, it now

appears that the lack of a built in Thru Port can be corrected through the use of a peripheral device.

The MIDI documentation which goes with the latest version of the MIDI firmware is not too bad and is a definite improvement on the original. Yamaha have very kindly provided MIDI voice charts, including for percussion, and I now have reasonably stable software which appears to achieve the original aim satisfactorily. I would also note that the potential MIDI problems of which I was forewarned by the manual have not surfaced. The imminent upgrade of Rhapsody is now awaited to fix various situations, at least one of which Clares denied ever existed! These include a MIDI voice selection capability and better captured data handling.

The reading of Michael Booms 'Music through MIDI' book is also in hand. This Microsoft Press book is a good read, especially if you are starting from a low knowledge base, but long-winded like many American texts and a bit light in some technical areas. It is also a relatively expensive import so borrow it, if you can. Incidentally, it would appear that MIDI could be used for general comms purposes, although this would smack of 'wheel re-invention'.

Now to control

My control project is still not off the ground - this is, very largely, due to the difficulties I have had in establishing what one can actually do with an I/O card. In this Acorn could have been more sympathetic. "Ask you local dealer" is the standard response but the dealers to whom I have spoken have not been very knowledgeable. My

research may therefore be of use to others who are attempting to tread this path. (To be fair to Acorn some of this information is buried somewhere inside their recently published Education Directory).

I am told by Acorn that the I/O card exists only for backward compatibility. Such is the inertia in our education system, however, that peripherals which require the User Port – the Concept Keyboard for example – are likely to be around for a long time. As a consequence, and bearing in mind that the latest widget isn't always necessary for a particular job, I feel that the educationalist/dabbler need not feel too bad about old technology. In fact, I was recently amazed to see several BBC micros still in use for experimental work at the research establishment of a major, and very high tech, international company, where the Archimedes were being phased out and replaced by Sun workstations!

What I/O can be done?

Given the 1MHz Bus, the User Port and the A/D Port (these are on the Archimedes I/O card and an A3000 expansion with rather more functionality is now available from Unilab), what can be done? One route is to get hold of Joe Telford's introductory book 'Control on the Archimedes' from HCCS. This is not ideal but does describe a number of DIY interfaces for those interested in electronics. (In the same vein, Atomwide do a DIY internal expansion card.) Buffered interface boxes will be needed to protect your Archimedes and you may prefer to send for brochures to help decide on the purchase of a ready built one.

The A/D Port is for input only and is designed to match the facilities of a typical joystick but, clearly, with the capability to handle other similar mixed analog and switched input. Several suppliers offer A/D breakout boxes. Of these, Deltronics appear to have the most comprehensive one in that, I understand, theirs gives access to the 'joystick buttons' in addition to the analogue data. Other, and possibly better, methods of dealing with joysticks are now available for the Archimedes, yet the A/D Port still has its uses.

The User Port is 'two way' and some interfaces seem to require to use the Parallel Port, which is

out only, in conjunction with it. Some interfaces specifically target either Lego or Fischer-Technik models whilst others are aimed at more general applicability. The facilities offered do vary quite a lot although they are all fairly basic and don't tend to offer much, if anything, in the way of upgrade options.

In principle, the 1MHz Bus options should have the most to offer. The peripherals I have come across which use this are from DCP Microdevelopments, Unilab and Paul Fray. The DCP units offer a modular approach to control and can, for example, permit stepper motor operation. The modules are daisy chained on an internal bus, incremental costs are not outrageous and the flexibility offered is attractive. The Unilab interface offers a wider range of features than those available on the User Port although it doesn't appear to cater for expansion. Paul Fray supply a range of 1MHz cards for use in their own rack system. They also offer the Arachnid real time control software extensions.

One complication is that control and data logging applications can be accomplished in other ways. Serial Port, Parallel (printer) Port and now I²C (IsquaredC) options are either available or about to become so. One option will enable servos to be driven directly from the computer; another is a controller in its own right. Maybe we will also see more use being made of MIDI outside of entertainment? Of these, the I²C route is one to watch with particular interest. Ian Copestake has announced the imminent release of a series of peripherals which will access the Archimedes' internal I²C serial bus. This has the particular attraction of requiring a very low cost hardware port on the computer. Morley Electronics already offer this on their User/MIDI card for the A3000 and I understand it is to become a standard on the IDE cards. Lesser mortals will have to be content with the loss of a podule slot. A consolation for those of us who have already installed the double width I/O card on a 4-slot backplane is that the tiny I²C outlet is expected to fit into that otherwise inaccessible and unused adjacent podule slot. I²C will offer very considerable expandability and has the potential for lots of functionality, once again at a reasonable cost.

If your use is serious/professional, consider the 1MHz Bus options but also talk to talk to Intelligent Interfaces and Wild Vision. They both supply a range of internal expansion cards offering specialised functions. Others provide specialist expansion cards for sound and video applications.

To sum up:

- There are a fair number of control peripherals available already both for professional and home/education use, although the professional range is nowhere as extensive as it is for a PC. Prices and facilities vary greatly. (Some peripherals may be used with other computers possibly with a little modification.)
- Serious users should consider the 1MHz Bus options but they may need different internal expansion cards altogether depending on the application. They may have to pay a higher total price in consequence.
- Watch I²C developments carefully. In the meantime, if you can't wait, look at DCP for expandability. Paul Fray's racking system and 'Arachnid' Software looks interesting.
- For simple applications with limited expansion ambitions, look at the A/D break out boxes and User Port interfaces. The 1MHz Bus will still be there for future use.
- Go for the sole purpose MIDI card unless you are convinced you want the I/O card capability.
- If possible, don't buy until you know what you really want. e.g. What sampling rate and accuracy do you need for Analog to Digital conversion? Do you need real time processing?

Unfortunately, the overall situation is pretty incoherent. Some of the software has not yet been released for Archimedes use and some may be rather primitive. Do check first. Check hardware compatibility too. Buyer beware!

To my mind, the jury is still out on my self posed question. I am, however, not unhappy (yet!) with the MIDI interface and do feel more comfortable having discovered the 1MHz Bus interfaces.

Apologies in advance to those manufacturers/vendors who have been left out or who may feel that I have misrepresented their product in any way.

They should be assured that this is unintentional and merely a symptom of the state of play!

I would welcome any further contributions and/or errata on this subject.

Contacts (and fallible guide)

A3000 Modules/Expansion Box	
H.C.C.S. (also the book)	091 487 0760
Morley Electronics Ltd	091 257 6355
Unilab	0254 681222

Concept Keyboard

Concept Keyboard Co Ltd	0962 843322
-------------------------	-------------

Joysticks/Joystick Interfaces

Voltmace (mouse replacement)	0462 894410
The Serial Port (parallel port)	0749 72234
RTFM Software (econet substitute)	0534 67870
Technomatic (int. expansion card)	081 205 0190

Data Loggers (serial port)

Phillip Harris Education	0543 480077
Resource	0302 340331

Sensors

GA Herdman	0777 700918
plus many others	

I²C 'Oddules' (yet to be released)

Ian Copestake Software	051 648 6287
------------------------	--------------

Servo control from Parallel port

Jansens	0733 244702
---------	-------------

Trekker Vehicle

Clwyd Technics Ltd	035283 751
--------------------	------------

Scorpion Serial Port Controller

Commotion	081 804 1378
-----------	--------------

Professional/Serious Expansion cards

Intelligent Interfaces Ltd	0789 450925
Wild Vision	091 519 1455

1MHz Bus Interfaces

Arcom (Farnell) (STE Bus system)	0532 636311
DCP Microdevelopments Ltd	0480 830997
Paul Fray Ltd (Farnell)	0223 66529
Unilab	0254 681222

User Port/Parallel Port Interfaces

Deltronics	0269 843728
Phobox Electronics	0305 853767

Economatix (Education) Ltd 0742 561122
Lego UK Ltd 0978 290900
plus Unilab, Commotion and Paul Fray

A/D Breakout boxes/external cards
Phobox, Deltronics, Commotion, Economatix,
Unilab

Parallel Port output module
Economatix

MIDI Thru expansion box
Electro Music Research Ltd 0702 335747

A

DataKing & DataTrans

Dave Morrell

"DataKing is an integrated database package designed for ease of use as a cross-curricular IT tool for Primary and Secondary phases." says the advertising blurb. In fact, to allow for progression through the age range DataKing can be configured in three different ways, known as DataKing 1, 2 and 3. DataKing 1 is a simplified, cut down version designed for primary age or the raw beginner. DataKing 2 is the standard form and DataKing 3 is only needed if a datafile becomes too large for memory. The desired version of DataKing can be selected by pressing <space> at the first menu which cycles through the three options.

First impressions are deceptive

My first impressions of DataKing were acutely disappointing. DataKing is not multi-tasking and takes over the whole machine. The main menu screen is in Mode 7. It looked like another convert from the good old BBC B. Once I started using it, however, I began to change my mind.

The program is entirely menu driven and, given that it is designed for educational use at all ages, this is probably a good idea. On later reading of the manual, I discovered that DataKing has been produced for most of the computers found in education and this has, presumably, led to a consistent interface over all the machines. Not really the RISC-OS ethos, but understandable.

Getting started

There are six options on the main menu. Option B, Begin Here, is a useful option to start with. It gives a very simple overview of the program and is quite handy for those of us who cannot be bothered to read manuals. It gives a suggested order for tackling the four main parts of the package and moves on to give a simple example showing what fields and records are.

In their suggested order for learning the program, Option A is the first option. This allows the user to begin a new datafile. To begin with, you only need to input a file name and the number of records. You then follow the simple on-screen instructions to produce your first blank datafile. One point I liked about this program is that field length does not need to be specified and could be up to 250 characters long. This means that children with relatively little experience in data handling do not have to think too long and hard about the length of every piece of data to be input. Each record can have up to 26 fields but, if necessary, the program could push this up to 31. Before saving the file to disc, you are asked to check whether all is correct and, if so, the file is then saved and the first record appears on screen ready for the input of data. As each record is finished, you are again asked to check if all is correct before it is saved. If it is not quite as you want it, the program allows you to edit the data one field at a time.

Once the simple basics of database handling are acquired, i.e. that each record is composed of several fields, the input of data is extremely easy with checks all the way.

Graphs & charts

After the data is in the file, what can be done with it? Most primary schools like to display this sort of work as graphs or charts. DataKing is well endowed with graphical options. Option C on the main menu selects the charts section of DataKing. The menu that appears is a graphical one. The various graphics options are shown in small icons with a letter above. Pressing a letter leads to a question and answer session concerning which fields are to be used etc. Once this has been sorted out to the user's satisfaction, the charts are

produced very quickly. Various bar charts, line graphs, pie charts and a scatter graph are available from this menu as well as options to return to the main menu, change the file being used or to enter the data workshop.

Charts and graphs can be printed directly from the program. As it comes, the program only supports monochrome printers with Epson graphics compatibility but instructions are given for producing colour dumps if a screen dump program is available. Presumably, the same technique could be used for printout on an inkjet, laser or non-Epson printer. For use in a DTP package, a screensave option is available. This was incorrectly described in the manual. A screensave is effected by pressing <S> not <ctrl-P>.

Manipulating the data

Option D on the main menu is the heart of DataKing. This is the Data Workshop, as they call it. This option presents the user with a menu list of datafiles held on the disc. Pressing the relevant letter for the datafile loads the data into memory to be worked on. At the same time, the user is presented with another menu detailing the workshop options. These are quite extensive; i.e. Print records, Browse through records, Calculator, Choose a different file, Return to main menu, Group data, Total fields and produce mean values, Sort, Search, Join files, Correlate fields and produce labels.

Option H is a sort option. One aspect of this I liked was the facility to save a sorted file under a different name leaving the original data untouched. This leaves two datafiles on the disc containing the data in different orders. The sort function seems to be very fast. One file I worked with was the "Placenames" datafile converted over from "Key". This contains 711 records of 10 fields. They did not seem to be in any logical order when I converted them over and they were sorted in alphabetical order of names in less than 1½ minutes including writing the file to disc. The sort is done automatically in the two simpler configurations of DataKing. If the total of the entries in the selected field is zero the sort is done alphabetically. If the total is greater than zero it is done numerically. This could lead to problems

with names such as 4Mation. To avoid this problem, it should be entered as !4Mation.

Option I is a search procedure. Like the rest of DataKing, all the information is placed on the screen and options chosen by selected keypresses. Again it is fast.

Printing records

In order to print out records (Option A), a print format screen has to be gone through. The default options on this are sensibly set for newcomers. The format screen allows the user to set up line or column output, the number of fields output, the column width, the type of paper in the printer and the size of print. This uses the default printer options, so seems to be printer independent. If anything fancier is needed, the search procedure can be utilised to extract the relevant records and fields. These can then be converted, very quickly, to CSV or TSV format ready for importing into a word processor or DTP package.

Summaries

Option C is a calculator. This allows one field to be defined as a function of another in a similar way to that of a spreadsheet. Each field in DataKing can be identified by a letter alongside it. The calculator uses these identity letters expressed in a formula. If, for instance, a teacher was to produce a datafile of marks for each child in a class, the total can be worked out automatically by DataKing using a simple formula such as Total (field E) = (fields) B+C+D, field A being the name of the child. This is a very simple example but serves to illustrate what can be done. Quite complicated formulae can be input and worked automatically. Various other examples are given in the manual.

Option F will allow the user to calculate the total and the arithmetic mean of each field. Results can be output to screen or printer. The example which the manual gives for this is keeping a record of scores during a school sports day. This could give virtually instant readout of individual or team marks.

Option G allows the user to create frequency distributions of the data in any field. It sounds very statistical but left me puzzled. The manual does not give much explanation and no example

for this option. I tried working through a few datafiles but still could not work out what I was getting. I could easily have chosen the wrong fields or the wrong files for this but I think more explanation is needed in the manual.

Option K will correlate two numeric fields to give a Spearman's Coefficient of Rank Correlation between them. Obvious examples for this using the data files provided are the correlation between size and wing span of insects and height, weight and shoe size of children.

Other features

Option B is for browsing through the datafile one record at a time using the cursor keys.

Option E returns the user to the main menu.

Option L, the final one in the workshop, is a label printing facility. Again, a question and answer session is provided to set this up. It seems to provide for a very flexible label layout.

Manipulating the files

Option D allows the user to choose another datafile from the set on the disc.

Option J allows the user to join files. This can be done in two ways. Two separate datafiles using the same format can be joined to give one file containing more records. Alternatively two files of different formats and fields can be combined to give one file of more fields. With this method, the fields in the second file are added to the end of the fields in the corresponding position in the first file and a new file is saved. Any two files can be combined regardless of whether or not the final result is sensible.

Editing the data

The last but one option on the main menu allows the user to extend or edit any of the available data files. DataKing 1 has three options: Adding records, Adding fields & Simple Editor.

Adding records obviously allows more records to be added to the file. For speed, the existing records are not read into memory so this option does not allow editing of any records. Adding fields will allow the user to add one or more fields to each record in an existing datafile. The program first asks for the name of the new field(s) and then goes through the file, record by record, so

that the new field can be added to each one. The file can be saved after each addition or left until the end when all have been done. Any new fields that are not completed during the one session can be entered using the Editor at a later date.

The simple editor reads the required file into memory and puts the first record on screen. The user can then single step through the records in the file. This is a rather slow method of working. If the number of the record to be changed is known pressing <F2> and entering the number will bring up the selected record. No new fields can be added using the simple editor. Screen display is the same as when starting a new file.

DataKing 2 adds a fourth option, an advanced editor, to this menu. I found this editor extremely useful and flexible. The data is loaded into memory as for the simple editor but this time it is displayed in a spreadsheet format similar to Pipe-Dream. Twenty records are displayed on screen at a time. The cursor and function keys are used for editing. A function key strip is provided.

Records can be added to or deleted from the file. When adding records data common to many records can be added automatically, as when replicating in a spreadsheet. Data slots can be copied. Fieldnames can be accessed and changed. When entering many records 'auto-entry' can be set up. This is not a mind reading facility unfortunately. It just moves the cursor to the next slot when <return> is pressed. 'Auto-entry' can be set to go down or to the right. The number of columns seen on screen, up to a maximum of nine, can be set by the user. Fields longer than the column width will be truncated to fit but the data will not be lost. To see the full field from a truncated entry, place the cursor on it and press <space>. The entry will appear in full at the top left of the screen.

The advanced editor also contains a search facility. This searches for specified words in specified fields.

One thing I did not like about the advanced editor was the use of <F9> rather than <F12> to access the operating system. I know that this allows a match with the Master and B series etc but <F12> does nothing. I would have preferred both keys to give access to the operating system thus giving

compatibility between machines and, on the Archimedes, programs.

All changes done in the advanced editor are in memory not on disc so it is essential to save the data before exiting DataKing. DataKing is well error-trapped in this respect as the only way I could exit without saving was a hard reset or switch-off.

DataKing 3 adds a serial editor to the extend or edit options. DataKing 3 is only needed when the datafile is too big to fit into memory. This should not happen very often with an Archimedes. The serial editor is very similar to the advanced editor but works with two disc files rather than one memory file. Records are read in twenty at a time, one screenful, from the source file to be worked on. When the cursor leaves the last line of the screen they are saved to the destination file and the next twenty records are read in.

The final option on is a Quit option.

Conclusions

If you do not have a database in school this could be a good buy as it is flexible, fast and easy to use. If you already have a good database in regular use, it begins to lose some of its appeal. If you use more than one type of computer in school it could have its attractions in that a consistent user interface across the machines would be available.

For use in the home I think this program has a lot going for it. It has a much easier learning curve than something like System Delta or MultiStore. These are two that I have had access to but I cannot compare it with something like Beebug's Masterfile or Clares' Alphabase as I have never used them. Price wise, DataKing compares with Alphabase.

Although the program is not multi-tasking, it does not upset anything left in the desktop when it is entered and does not appear to make any changes to the machine's configuration. This program can be recommended as a simple database which is fairly powerful and flexible.

DataTrans

DataTrans is a sister program to DataKing from Shenley Software. It is a fully RISC-OS compat-

ible, multi-tasking application. Its purpose is to convert data between different database formats. When run, it sets itself up on the icon bar in the usual way.

To convert a datafile, drag the file icon to the DataTrans icon on the icon bar. A menu appears consisting of two columns of names of popular databases, mainly educational. The left hand column is titled "Read from" and the user must click on the button next to the database being converted. The right hand column is titled "Write to" and the user must click on the button showing the format they wish the data to be in. That is all there is to it.

It is fast and it works well. Most educational databases are listed as well as Mail merge(!), CSV and TSV (TAB) formats.

Several datafiles were provided, mainly from the educational sector. All these were converted for use in DataKing without problem. I also converted several to TAB format and imported them into MultiStore without much difficulty.

In my BBC Master days, I used ViewStore a lot and still have many of these files around. All these were converted without problem.

The only problem which I encountered, and expected, was in trying to convert some of the specialist datafiles for Key which ITV put out. Many of these contain pictures, in BBC format, and I was unable to convert any of these. Standard Key datafiles such as the Placenames file converted with no problem.

Conclusions

Have you a need to convert data from one format to another? If you have, this program could be very useful. I wish it had been available a few years ago on the BBC. At £18, it is not cheap for what it does but it does it easily, quickly and accurately.

I think it could find a place in many schools considering the plethora of databases, all with different formats that abound in the educational sector

DataTrans and DataKing are both available from Shenley Software at £18 and £48 respectively. **A**

Twin World

Stuart Turgis

Twin World is a wonderful new game from Cygnus software. Basically it is a sort of 'levels' game similar in style to games on the BBC/Master like Blagger, Manic Miner etc.

The differences are that, graphically speaking, Twin World is far, far better (as you might expect), not only in the design of the screens, but also in the animation. A vivid example of this is the response of the hero to your key presses; if you hold down a direction key, your hero will start walking briskly in that direction. However, if you suddenly change directions, he slides a bit, then starts walking in the direction you desire. It's attention to detail like this which lifts this game above the usual genre of levels games. Also, the game area is not a single screen, so each level occupies about five or six screens, with smooth scrolling as you walk. There are some 23 levels in all, divided between five different scenarios. Each scenario is four levels and between each scenario is a special bonus level where you just get points.

Adversaries

What else makes it different? Well, firstly, there are lots of adversaries, mystical beasts of every shape and size, which you can shoot by using one of three types of spells. The spells differ in the number required to vanquish a beast. You can restock your spells by collecting certain objects as you go along but the more powerful spells are less abundant (especially on the lower levels).

Secondly, Twin World gets its name not from the different scenarios or the number of levels but from the fact that on each level there are two worlds, so you can avoid some beasts and obstacles by switching worlds. You do this by pressing <down> once you are in an appropriate doorway and you do a quick spin and.... you're in the other world.

Object of the game

To proceed to the next level, you have to find a piece of the missing amulet, take it to the doorway which has an amulet sign on it, press <down> as though you're trying to switch worlds

and your hero waves at you to confirm the completion. So, if you want, you can avoid a lot of the obstacles and beasts and go straight for the amulet. Of course, it is often located in quite a distant place so, inevitably, there will be a number of obstacles to overcome.

Objects

Along the way you will find many objects. These automatically stock up your spells repository to a maximum of 99 per spell type but you will also find items which score points (a little bell rings and you will see a score floating off to the top of the screen), keys which are used to unlock many of the doorways, extra lives, skulls which remove lives, springs which give you extra height for jumps, parachutes which let you fall greater distances and a flute which allows you to summon a genie to buy extra objects (in exchange for points).

Touches of brilliance

Other nice touches in the game are mainly in the animation; for example, if you bang your head too many times, your hero stops, takes his hat off and scratches his head. The second world is underwater and your movement is very much restricted as it would be under water and, finally, when you eventually die, your hero gives a quick spin and falls to the ground. It's just great!

Music

The music throughout the game is very good, from the initial loading tune to the different scenario tunes (yes, the music changes to fit the mood of the scenario) and the final 'congratulations' tune when you've completed all the levels. Unlike some games, the music can be toggled between high, medium, low and off, and this is separate from the sound (explosions etc).

Finale

For the very final level, you will need to make sure that you have plenty of spells, especially the more powerful ones, and plenty of lives. This is because you face the evil lord who throws all his minions at you in successive waves and, having

defeated them, he himself mutates into a massive dragon which you have to try and destroy.

Running details

Twin World, which is from Cygnus Software (priced at £19.99 or £18 through Archive), is one of two new games ported across from the Amiga, (the second being Iron Lord). As you would expect, it runs happily in 1Mbyte of RAM but, unusually, it runs from, and returns correctly to, the desktop. It is unprotected, so it will run from floppy, hard or RAM disc.

Two applications are on the disc. The first is a help program which sets the scenario, explains the objects, keyboard etc and how to load/save games. The second runs the game. Having completed a level, when you are shown the picture of the amulet, if you press Save, your current position

is saved but, be warned, it overwrites the last position. (The file is called SavedGame if you want to copy it for each level.) This position is restored when you choose the Continue Game option.

Conclusions

Brilliant, just brilliant! The only minor grumble is that it is obvious that it was a port from the Amiga or ST, the screen is only being about half size (height wise). It's not over-priced, it's addictive, it gets progressively more difficult, the save position is essential and, graphically, it is excellent.

I've completed the game and have given Paul some hints, tips and a cheat for jumping levels. I expect this will be published in a few months time, when you've all had a go at playing it! **A**

More Notes on BBC Emulators

Brian Carroll

At the end of last year I parted company with my long-neglected BBC Model B. Murphy's Law dictated that very soon afterwards I found the need to run BBC and Master software, from DFS discs, to help several newcomers to those machines! The result was that I had to take a serious interest in the Archimedes 6502 emulators and the various DFS emulations (see review, Archive 4.1 p 48) including recently the new disc from Acorn, and I have spent a lot of time getting as close as possible to a disc based BBC Micro.

These notes supplement the valuable contributions by Brian Cowan and David Bower (Archive 4.5 pp 37-39) and acknowledge the documentation in the latest Acorn package. I hope that what follows will help readers who have not yet got a copy of this package.

A brief history

The two RISC-OS 6502 emulators, 65Tube and 65Host, have a rather complicated history. There have been two versions of the former and three of the latter. Table 1 (overleaf) shows these releases and the actual versions, sizes and dates of the component parts of the packages. Release 1.6 is the only one to have adequate documentation and includes some conversion utilities.

65Tube

The 65Tube emulator should be regarded as a BBC 6502 Second Processor which uses Archimedes and RISC-OS for input and output instead of a BBC or Master Computer. It contains a copy of HIBASIC ver. 4.3 which is immediately entered when the emulator starts. Note that the start-up screen message gives the Tube OS version, not the emulator version. All RISC-OS filing systems, *-commands and system facilities are accessible; including all screen modes, not just the BBC ones. There are only two internal *-commands: *EMULATETUBE to start it and *QUIT to leave. The Release 1.6 application, !65Tube, has a new icon and a useful !Run file. The system variable 65Tube\$Mode in the latter can be edited (in two places) to start the emulator in any chosen screen mode. Though not essential, I recommend starting the application from the Desktop.

PAGE in the emulator is set at &800 as expected and 44K is available to the user. Anyone with 'High' versions of BBC software would be well advised to use this emulator; subjectively, it runs as fast as an ordinary BBC 2nd processor (except in screen mode 7) and is very straightforward to use with both ADFS and (if available) DFS. Hi-Wordwise Plus works admirably, and the Hi-

Table 1: BBC 6502 Emulators – Summary of development

Source	Release number	65Tube version size date (module)	65Host version size date (module)	BBCsound version size date (module)	ARFS version size date (ROM)	UTILS version size date (ROM)
Acorn Apps 2 disc	Initial RISC-OS release	0.96 29K Nov 88	0.97 55K Dec88	No	0.13 3K Dec 88	0.01 16K Nov 88
Acorn RISC-OS Extras disc = Shareware 17	1.4	No	1.14 63K Sep 89	0.07 1K Feb 89	1.09 6K Aug 89	ditto
Acorn BBC Model B Emulator disc	1.6	1.17 31K Apr 90	1.19 63K Jul 90	ditto	1.24 7K Jul 90	ditto

within the emulator: they are used, for example, in the !Run file. These commands include *DIPSTATE, previously undocumented, which replaces *FX 255 ,n to allow selection of the startup screen mode.

Inside the emulator, several specific *-commands are however provided and all the BBC filing systems can be called: *ADFS, *NET, *DISC/DISK, *ROM, *TAPE and a new one, *ARFS. ARFS acts as a gateway to whichever RISC-OS filing system is current on entry to the emulator, e.g. ADFS, NET, or DFS. *ROM

View packages should do as well. Programs that attempt to access a BBC input/output processor's facilities, e.g. sound, are unlikely to work fully. To prevent external memory access, 65Tube treats addresses &FFFFxxxx as within its own address space rather than in the I/O processor's.

65Host

This application substantially emulates a BBC micro with OS 1.2 and BASIC 2. It can be set up with all or some of the 16 potential sideways slots as either ROM or RAM. It cannot access RISC-OS facilities or screen modes directly, as 65Tube can, except for specific but restricted access to filing systems. It is particularly important to note, as Table 1 shows, that the application !65Host comprises four parts and that these will be set up correctly only if the !Run file is used. The application is therefore best started from the desktop: it is definitely not sufficient to *RMRUN the BBC 6502Emulator module! What follows is mainly about Releases 1.4 and 1.6.

It should also be noted that the various *-commands mentioned in the User Guide pp 153-155 are available only from RISC-OS, not from

and *TAPE do nothing useful; *ADFS, *NET select these systems via RISC-OS; and in Releases 1.4 & 1.6 *DISC selects a rough emulation of the BBC DFS that is coded in the ARFS and UTIL ROMs.

When one is using one of the RISC-OS filing systems via ARFS, only the commands recognised by both ARFS and the external system are implemented. These include all the more common ones but sometimes the screen output is less complete or in a different form. Release 1.6 has considerable improvements in this area.

If a RISC-OS DFS is available, e.g. ArcDFS, it may be accessed via ARFS by using syntax such as *DIR DFS::0 for DFS drive 0. *DRIVE is unrecognised and will not be passed on by ARFS and *DISC will select the emulated internal DFS. Even better is to load and set DFS as the current RISC-OS filing system before entry and then to set ARFS as the entry BBC filing system (see below). Release 1.4 already sets the latter but Release 1.6 sets ADFS. It is worth remembering to set *ADFS before leaving the emulator with *QUIT.

<Reset> resets RISC-OS as usual, but <break> and its variants operate more or less as on the BBC, except that <shift-break> does not look for a !BOOT file. However, when the emulator initialises or when the new command, *RESET 1 which emulates a power-on 6502 reset, is invoked, the emulator looks for a file and option (*OPT 4,n) that have been set in system variables 65-Host\$BootFile and 65Host\$BootOptions, so this useful BBC feature can be approximated. The BootOptions value also specifies the emulator's default filing system, from which the BootFile is to be fetched (see Table 2). The option and filename may also be passed as parameters when the emulator is started from the command line.

Table 2: 65Host Boot Options

The system variable 65Host\$BootOptions is set to a 32-bit hex number which is read as a string; i.e. &00000<n>0<m>. The leading zeros may be omitted.

Value of <n> (bits 8 - 15)	Filing System
0	Default (Release 1.4, ARFS; 1.6, ADFS)
1	TAPE
2	TAPE3
3	ROM
4	DISC (i.e. the internal DFS emulation)
5	NET
6	-
7	-
8	ADFS
9	-
A	-
B	ARFS (i.e. the current RISC-OS system)
C-FF	-

Value of <m> (bits 0 - 1)	Boot Action
0	No action
1	*LOAD
2	*RUN
3	*EXEC

The 'internal' DFS invoked by *DISC uses the current RISC-OS system, normally ADFS, with rather elaborate and inconvenient translations of filenames. It requires, say, an ADFS disc to be set up with four directories in the root named 1, 2, 3 and 4 which are 'looked at' by DFS as four BBC drives. There seems to me to be little point in using this system when ADFS can more conveniently be used directly: it definitely did not meet my need to be able to use standard BBC DFS floppies in my external 5.25" drive!

Though the latest Release 1.6 has improved the internal DFS emulation in many details, the fundamental difficulties with it remain. This Release has lowered default PAGE to the normal BBC 'B' value of &1900 and it may be further lowered with care to &1100 to release more memory. Some other detailed improvements have also been made, and it runs generally faster than the earlier Releases.

As mentioned above, all 16 sideways slots at &8000 are potentially available. BASIC is always seen in slot 12; ARFS and UTILSRAM are cached in slots 11 & 10 by the !Run file. Other BBC ROM images can be cached in any of the remaining slots, including 13-15 if a startup language other than BASIC is preferred. I have tried numerous BBC ROM images which seem satisfactory unless they try to use non-existent or different hardware. View, Beebug's Toolkit+ and Beeb-Help, and Wordwise Plus all work properly but fairly slowly. Other slots may be prepared for sideways RAM (the !Run file needs to be edited as required). ROM images may then be *SR-LOADED within the emulator using the BBC Master SRAM commands and syntax. Each slot that is set up as ROM or RAM besides slot 12 needs 16K in the RMA: 240K for them all.

ArcDFS

This package has been adequately reviewed elsewhere so I will limit my remarks. I think the package is really excellent value; it provides all the facilities of the three common BBC disc systems, and much more, and the manual is a model of clarity. In the desktop, a new drive icon is provided for each floppy drive surface. Eight surfaces can be handled, so if a DFS ramdisc is

set up (using *RAMDISC <drive>) it need not be an existing drive as the manual implies. Windows behave exactly as for ADFS, so file transfer and manipulation are extremely easy. The root DFS directory is always displayed and files in other directories are shown with their directory letter, so transfer to ADFS may need some re-naming.

One note of caution: the icons and other file data displayed with 'full info' are meaningless and untidy. However, do not be tempted to *STAMP or *SETTYPE DFS files because you will then change the addresses in the disc directory that DFS and the emulator will require for correct *LOADing. This does not matter for BASIC files, so it is possible to define a filetype for these and then provide an icon and RunAlias.

All the many DFS commands are available from the *-prompt. *EX and *INFO show heading, addresses and the L attribute in correct DFS format. The !RunImage application is not required for such use, only the modules DFS and ABC-library. One particularly useful new *-command is *ASSIGN which permits reallocation of logical drive number to physical drive surface. I use this to make my external 5¼" drive 2 appear from 65Tube and 65Host to be DFS drives :0 and :2 instead of :4 and :6. Another useful one is *DETAILS which reveals a disc's size and format.

Using various features of 65Host and ArcDFS, I have edited my !Run file (available on the monthly disc) to start an application !BBC+DFS which provides a DFS-based BBC 'B' with ROM/RAM expansion card. Clicking on the icon, loads both emulator and DFS and looks for an EXEC !BOOT file on the 5¼" DFS drive :0. I have tried many of my old BBC discs and most behave just as before.

Extras

As well as the new emulators, Release 1.6 includes some utilities to help with the conversion of BBC Model B BASIC programs to run in native Archimedes mode under RISC-OS. I have not used these yet. There is much advice in the manual on this topic besides detail of all versions of both 6502 emulators. There is also a comprehensive list of 3rd party software, hardware and

services aimed at the general objective of using existing BBC software one way or another on the Archimedes.

Documentation

The voluminous documentation is provided only as files on the disc in both raw text and Acorn DTP forms, and three raw text ReadMe files. The total material is nearly seventy A4 pages but there is a great deal of repetition and, as the files are all dated Aug or Sep 90, the new bits in the ReadMe files should have been included in the main text.

There are still some obscurities and ambiguities. Much of the material applies to all the Releases and should have been in the User Guide. I do not have Acorn DTP so I have no page numbering or index. One day I shall edit the lot and would expect the volume to be halved. I do not like having a manual provided only in disc files and hope this is not an Acorn trend.

Conclusion

Both emulations are now very satisfactory and should allow a great deal of BBC software to be used as it is. Emulation of the BBC DFS in 65-Host is not good, even in the latest Release, and of course there is no DFS emulation with 65Tube. Both, however, work harmoniously with ArcDFS after a bit of 'tweaking'. Naturally, full DFS compatibility requires an external 5¼" disc drive.

Everyone should certainly be using Release 1.4 (Shareware 17). The further improvements in the actual emulations of Release 1.6 are modest but it is the first to provide adequate documentation which allows the software to be properly exploited and some conversion utilities.

Whether Release 1.6 is good value is a moot point. Personally I think almost £20.00 is far too much for only modest performance improvements and a machine readable and poorly edited section omitted from the User Guide; it would be less unreasonable if a printed manual were included. Nevertheless, I certainly could not have arranged so effective an emulation without the manual and for those who have substantial BBC software they want to continue to use with the Archimedes, the new Release is essential. **A**

Archimedes Quest

Joe Gallagher

The educational database Quest was one of the first available for the BBC Micro but has gained the reputation of being something of a dinosaur in these days of drop down/ pop up, all-singing, all-dancing windowed systems. Its origins predate the era of bit mapped graphics, let alone the widespread use of graphic user interfaces. Quest's roots were very much in the dBase mould of command driven databases and it has retained this flavour in all of its incarnations. The latest offering, Archimedes Quest from the Advisory Unit at Hatfield, proves to be no exception to this rule.

The program comes on a single disc accompanied by a slim guide similar to those which have accompanied previous releases. On booting up, you are presented with the "Values" screen which acts as the command centre for Quest's operations. This is the same Mode 7 screen as is found on earlier releases - it is unfortunate that the authors chose to use the Archimedes' rather feeble emulation of a teletext screen. Clearly they have been concerned with retaining the look and feel of Quest on the Beeb. This screen, despite looking rather plain by today's standards, is highly informative, as previous users of the program will recall. Apart from the usual status information, it shows the file's fields, the last typed query, which fields will be displayed by the PRINT command and in what screen format they will be shown.

Quest is not a RISC-OS application. It can be run from the desktop as an ordinary single tasking program and under the latest version has its own icon which can be installed on the icon bar. However, it makes use of neither the window manager nor the system's concept of filetypes.

The former is perhaps inevitable in the light of the decision to retain the traditional command driven approach. This omission seems heretical given the growing proportion of Archimedes applications which is multi-tasking. Indeed, apart from its speed and graphic capabilities, it is the powerful and easy to use windowing system of the Archimedes which enables it to retain the

edge over rivals of comparable price. Acorn would dearly like to expand its existing user base but schools and colleges still represent an important market. The RISC-OS desktop would seem to be tailor made for this educational environment. The Archimedes' consistent, easy to use and intuitive menuing system allows operating knowledge gained using one application to be readily employed when learning a new one. Both student and teachers can get on with some useful work quickly and without having to become expert in dozens of arcane commands. With respect to information handling, multitasking offers the student the opportunity to construct several views of their findings and export these results, whether they be text or graphics, to another application for further processing.

Retaining the old Quest interface appears to be a deliberate decision based on the premise that, the user should be able to switch rapidly from one facility of the program to another without having to go through a labyrinth of menus and submenus. To help you along the way, the function keys are defined with many of the most used keywords and there is an extensive help facility accessed by typing HELP.

However, the fact remains that the user needs to know a minimum number of commands to get going. I read recently that, amongst other things, an ideal educational database should never take more than half an hour to get to grips with. While sympathising with the sentiment, I feel that even the most sophisticated user interface does not remove the need for the learner to come to terms with the conceptual hurdles involved. You can quickly learn how to knock out a few interesting shapes with !Draw but it will take you slightly longer if you really want to use it in anger. The truth is that, for all but the most trivial of tasks or those such as word-processing, which are really aids to an existing skill, there is a learning curve to be climbed. This is especially true of information retrieval. The question is, does Quest make it steeper than it need be?

In Quest it is possible to build quite complex conditional searches from simple ones (and those containing multiple test values) joined by logical operators. There is, however, no equivalent to the "history" command found in some database systems and no way of stringing together a sequence of queries with display or formatting commands. Everything takes place in the immediate mode with no possibility of editing other than using the copy key to copy a line of text entered previously and no way of saving a sequence of operations except by the rather artificial and awkward use of a command file executed from the "star" prompt which is accessible at all times.

While one can see a rationale for sticking with a command driven approach, the lack of any kind of macro facility is, I'm afraid, something which greatly diminishes the much vaunted power and flexibility of the system. Furthermore, the RISC-OS menuing facility is a huge improvement not only on the old style full screen menus found in packages such as Key on the BBC, but also surpasses those of the drop down variety found on the Mac and in the Microsoft Windows environment on the PC.

How then does Archimedes Quest shape up as an educational database for the 90's? This version, on the face of it, would seem to offer very little more than a bigger and faster edition of its 8 bit predecessor. However, it certainly is both of these things. Quest runs comfortably even on an unexpanded Archimedes 305 (are there any of these left?) and it easily out performs its equivalent running under MSDOS on a Nimbus, despite being coded entirely in BBC BASIC!

However, speed apart, there are a number of enhancements to this version which make it worthy of consideration. Quest's infamous unfriendly command language has mellowed somewhat to include more natural language terms. For example, the program now allows you to substitute "has" for "sub" when searching for a text substring in a query and there are similar modifications for handling other relationships as well as housekeeping operations.

While Quest has always been highly rated for the flexibility of its interrogative facilities, the same

could not be said to be true of its file handling. This area has been improved considerably. Quest is perhaps the grand-daddy of educational databases and this is reflected in the fact that many of its competitors have facilities to read and write Quest files. In addition to this, Quest32 is able to import and export files in both comma separated and tab separated format, as well as data files from earlier versions of Quest. Further flexibility has been added in that it is now possible to merge two data files and add or delete fields within the database.

Quest's ability to communicate with other programs is now fairly respectable, although it still falls short of those provided by a true RISC-OS application. Nevertheless it is possible to export virtually all of the program's output; textual, statistical or graphical (as Archimedes sprites) to external editors. You can create a data file for First Word Plus' mail shot facility simply by saving a file or a selection from a file in comma separated format.

Graphs & charts

Undoubtedly, the ability to derive graphs and charts from data files helps the novice user in interpreting their data. Quest has a fairly comprehensive and integrated charting facility which is accessed by typing STATISTICS or pressing the appropriate function key. This leads to a menu (yes, there is one!) which includes options for pie charts, scatter graphs, histograms and bar charts. Tables of corresponding statistics for each graph can be viewed at the press of a button. Graphs can be dumped out immediately to an Epson compatible printer or saved to disc. In fact, in order to print a graph out on an Integrex colour printer, it is necessary to save the screen first and then print it from the desktop using the RISC-OS printer drivers. The graph facilities, while adequate for most purposes, are perhaps the most unfriendly part of the program. Quest does not require the user to define the type of data being entered. So, when you choose to view a graph, the program cannot check to see if the fields you are using will produce sensible results. Instead, it proceeds to check through all the records before giving an obscure error message where it encounters inapp-

ropriate data types. Unfortunately, the manual is rather brief in its treatment of statistics. As this aspect of the software is probably the most difficult for unsophisticated users to master, a more step by step approach with worked examples would have been welcome. For instance, the handbook introduces the use of order files for constructing bar charts but fails to give an adequate explanation of how to derive these.

Archimedes Quest is a worthy, if unexciting, product. I think it should have been possible to build on its existing strengths while taking on board the benefits of working as a true RISC-OS application. As it turns out, it has merely accomplished the former.

The large number of data files available for the program allied to the extensive support materials

produced, will ensure that it will continue to have its adherents.

Quest is not really the way forward in 32 bit databases but it certainly does offer excellent value for money. For £30 you get a program with a wealth of features and it can be networked at no extra cost. Archimedes Quest may look primitive when compared to glossier offerings such as Minerva's Multistore but, at nearly a tenth of the price, it may still prove to be an attractive offering to schools with hard pressed budgets. The real test of it will be how will it fare in the face of competition from the very fully featured and attractively priced Key Plus offering from ITV Schools.

Archimedes Quest costs £30 and is available from the Advisory Unit for Microtechnology in Education. **A**

The CITIZEN IFDD – A “Whoppy”?

Ned Abell

The Archive team will soon be seeing new removable hard discs hitting the office telephones in June or July with the launch of a Citizen Europe system delayed from “early 1991”. One version was previewed at last year's Which Computer Show at the NEC.

If your computer does not already have a Winchester disc or a second floppy, this product could well be for you as it's a large capacity 3½" Floppy Disc Drive, (presumably with the “I” standing for Intelligent?).

The IFDD will take a standard 3½" floppy disc and read (but not write) the files on it but its interesting new feature is that it will also read and write to new high capacity 3½" metal-media removable discs. There will be two different IFDD versions offered, one accepting 4M discs scheduled for release in June and the other taking 20M discs which will be released towards the end of the year. I understand the discs are not interchangeable.

Read, Read Write

The IFDD reads ordinary 3½" discs for both 1.44 M and 720 K formatted capacities, whilst it also

acts as a large storage medium that can be removed to a safe place. The drive unit is 101 x 25 x 153 mm (the same approximate size as a current floppy drive) and works with a SCSI interface that can be supplied by Citizen on a board 101 x 8 x 154 mm and the drive weighs 600 grams. Some testing will be required to see how the Citizen interface will mate with the Archimedes and whether existing Archimedes SCSI modules will control the new drives and I'm hoping to acquire a complete unit for “the hardware team”.

I understand that the higher capacity is achieved for the 20M drive at 540 tracks per inch at 600 rpm and 63 sectors per track. It is possible that the discs use special patterns on the surface, probably using CD drive optical technology to correct the head's position over the disc guide line and thus transfer the data which it will do at 3½ Mbit per second at an average access time of 50ms. The discs will be initially supplied by Maxell and TDK.

Whoppies!! or is it Flopchesters??

The idea must be that you can fit an IFDD as your only conventional drive and store larger quantities of data yet still retain the ability to read your

old discs. Old files could then be copied through memory to the new medium. I expect the new discs to have a write protect switch like a conventional disc.

If you send discs through the post – beware. If you mail an IFDD disc to someone they must have an IFDD of the right size to read it. If you want to send a standard 3½" disc, you can't write information to it on an IFDD, so its best to think about running both systems – along with the 5¼" you have for the PCemulator because it was left over from the Model B!

Options

In the Archimedes market, the most likely use for an IFDD would be to give the single drive home user both a second facia-mounted drive and a hard sized disc, with the ability to copy conventional discs put in the IFDD source to the existing destination drive 0. Archiving could be done from a source on drive 0 to backup storage on the high capacity IFDD and you could copy high capacity IFDD discs via the computers memory to either a new disc in the same drive or to lots of standard floppies in the other! Any system will take some careful thought to help your particular applications.

New computers?

The implication for the whole Acorn range is interesting. Do we see the emergence of new home machines with larger levels of RAM and high processor speed to cope with greater windowed multi-tasking but only one 20M IFDD disc? It would make a lot of sense if the new ARM portable has a whoppy, a serial port and no hard disc. Equipment manufacturers will have access to the 4M drives in a couple of weeks. There are no exact retail price details as yet but its expected that 4M drives will be about 30% up on the cost of existing 3½" drives and 20M versions will be the equivalent price to conventional 20M Winchester. The success of the whole project will depend on which manufacturers start fitting them to computers and thus on Citizen's initial pricing policy and especially on the price of the discs. Maxell say that on launch they are expecting 4M end user disc prices of £90-100 per box of 10.

Knitting fog!

The technology looks very good, if somewhat slower than the 20ms access Micronet removable discs. No doubt access times will improve. If these IFDD units can be supplied to the customer at a price lower than equivalent conventional hard disc storage, with Citizen making excellent royalties from the disc sales and offering the technology to other manufacturers at reasonable cost, then they could become the industry standard and replace the standard floppy because they will still read the older discs – yet the 5¼" disc is still taking a long time to die and some people are still using 8" – so do we want yet another format? Given the upward compatibility of the IFDD, I think we can cope with another format and I certainly will be buying removable hard discs. The only question is – which one? I think the price and availability of the discs themselves will decide it – a sort of pounds per Megabyte equation being needed. In my case, I'm staggered to see I've got 155 discs in boxes in front of me – that's 124M – plus quite a few blanks so I put together a table of likely costs.

Storage Costs for Removable Discs

Costs per Mbyte based on 150M of data.

Archive February 91 prices for a A310 including podules. (Therefore add 2.5% for VAT increase.)

	Nº of Media for 150M	media cost £	2nd drive cost £	£ per Mbyte
Floppies	187.5	225.00	100	2.2
IFDD-4 (projected)	37.5	356.25	130	3.2
MicroNet 42M	3.6	285.70	595	6.7
IFDD-20 (projected based on 20M Hard disc prices inc. podule and proportional media costs)	7.50	356.25	400	5.0

Assuming you need a fixed disc to store all the data and you need room to grow...

Internal Fixed Hard Drives

Costs per Megabyte based on 200 Megabytes

200M Oak SCSI	1240.00	6.2
200M IDE	1033.85	5.2

The cost is certainly an important factor but my ability to manage my existing data is more important! Many of my discs are backup copies and there is much pruning to be done. Buying !Spark has made the collection physically smaller. I also need the ability to find a font, letter or picture quickly and thus my discs are labelled in this generic fashion. The range of applications I use is limited but putting several on a disc is difficult because of the 800k floppy limit. If I had a hard

disc, I would use it to hold commonly used programs and current projects, a removable system allows that and security. Looking ahead is like knitting fog but I can see the advantage of having all my Fonts with !Impression, !PDriver and !system all on one disc with room to spare!!

I'm therefore looking at this whoppy option extremely closely and hope to write more on this soon, even if I don't intend to hurl them across the office! **A**

Technoscan II Upgrade

Alan Mothersole

Technomatic have recently announced a software upgrade for existing users of their Technoscan hand-held CCD scanner. This upgrade is available for £22.50 +VAT and consists of a new ROM to fit onto the interface board, a fitting instruction sheet, new disc based software and a comprehensive manual. (Readers may like to refer back to Archive 3.5 p50, where I reviewed the original scanner.)

The ROM is easy to fit provided the orientation if the original is observed. The instructions are easy to follow. Powering up the computer and typing *Podules from the supervisor prompt displays the message 'technoscan II scanner podule V2.00'.

The disc contains the same sample scanned images as before but has a new application file for the scanner. Double clicking on this mounts the scanner icon on the icon bar adjacent to the drive icons. Clicking on this opens a task window and clicking <menu> displays the options. The application is multi-tasking, except during scanning, and can be used with the interactive !Help application.

The purpose of this review is to describe the main differences between Mark I and Mark II scanners. The software versions are 0.95 and 1.91 respectively.

My first observation was that Technomatic have changed the scanning head sold with the software however there did not appear to be any electrical of software incompatibilities between the new software and my old scan head.

True monochrome scanning in Letter mode now works correctly and is available at the highest resolution of 400 dpi. Clearly, one of the main uses for scanners is in DTP and therefore the author has kept the memory requirement to a minimum of 64k to ensure its compatibility with Impression, Ovation, Tempest, etc. on a 1Mbyte machine.

The manual now runs to 55 pages of well presented tutorial, technical and problem solving content.

On the scan head, the resolution switch action has been changed such that rather than changing the size of the scanned image it now changed the number of pixels scanned across the full width. With the original scanner, sprites could only be saved as mode 12 sprites but with the Mark II, the default modes are 12, 20, 0 and 18 for 16 grey, 8 grey, mono (hi-res) and mono (lo-res) respectively but the sprites can be saved into any screen mode.

Further to this, it is now possible to load any (default mode) sprite back into the scanner task window. This is a great boon for anyone wishing to use the powerful 'cut' facility or palette changes on a previously saved sprite. The basic scanning method remains unchanged except that there is now an accompanying 'beep' to the changed screen border colour when scanning is too fast. This saves you from having to look at both the screen and the scanner at the same time!

Additional set-up options can be defined prior to scanning – to preset the size of sprite, scanner

resolution, image resolution and zoom ratio. The latter allows the x to y ratio to be fixed. An additional useful feature is an auto shut down of the scan head if scanning has not been started after a preset time. This will help to prolong the life of the CCD sensor.

Extra zoom features are available for processing a scanned image. 'Normalise' will ensure that the saved sprite will have the correct size and aspect ratio of the original object. 'Fit to Screen' reduces the size of the displayed image to fit onto the screen but maintaining the correct aspect ratio. The Edit options have been updated to include rotation of the sprite by +/- 90 degrees.

Another improvement has been made with the palette. The original version allowed the user to change the colour tint of the two extreme colours only but the new software takes a different app-

roach. A set of vertical 'volume control' slider bars are shown which can be used to adjust the grey levels from black to white of each of the grey levels or allocate a non-grey colour to a grey level. It is therefore possible to introduce colour to a black and white sprite. This could be very useful in DTP.

Finally, the option of printing out the sprite has been provided without having to load in !Paint was necessary as before. Printing is done with the RISC-OS drivers and this review was made with Version 2 of !PrinterDM. It is possible to set orientation, magnification, margin and number of copies. This appeared to work quite satisfactorily.

In conclusion, the upgrade appears to be a worthwhile investment and a significant improvement over the original. **A**

Help!!!!

• **Dynamic mouse resolution** – I have been told that there is a module (?) for the Archimedes which makes the resolution of the mouse "dynamic" (i.e. transfers fast/slow mouse movements into big/small pointer movements); can anyone tell me if this is so and where to obtain this software? Jochen Konietzko, Fuchlinger Weg 15, W-5000 Koeln 71, Germany.

• **Graphics and music** – I want to synchronise graphics & music using sound-tracker and Maestro files from BASIC V or using SWI's. Can anyone help? D.P.Allen, 12 Grove Farm Park, Mytchett, Camberley, Surrey, GU16 6AQ.

• **Help for the handicapped** – Many may not know that for a number of years, Aleph One have sold computer-enhanced bio-feedback systems which are used to help in the rehabilitation of physically handicapped persons. Signals emanating from muscle tension appear on the screen as graphs or are used to control video games. Aleph One have recently translated the software as a RISC-OS application and are looking for free or public domain games that can be made available, with the package, to these patients. If you know of any entertaining games that could be controlled by one or two joysticks or switches, please talk to

Laurie van Someren at Aleph One on 0223-811679 or fax him on 812713.

• **HP DeskJet 500 problems** – Has anyone had success in controlling the HP DeskJet 500 directly from BASIC V? I have been unable to alter the printer's font characteristics e.g. bold, pitch, etc using the Archimedes' BASIC VDU command. To my disgust I have had little or no technical support from Hewlett Packard or my local HP dealer. Roger Darlington, 1 Fells Grove, Worsley, Manchester, M28 5JN.

Help offered

• **Improved Hawk V9 utilities** – Some ARM code image processing utilities have been written for the Hawk digitiser. These are corrected and enhanced versions of the Hawk utilities along with 1D and 2D Fast Fourier Transforms. If you are interested you should contact Claus Birkner, Gneisenaustr. 1B, W 5800 Hagen, W. Germany.

• **Using an HP7475a plotter with the Archimedes** – If anyone wants to know how to connect a HP7475a plotter to the Archimedes, especially if they need to use Archimedes PCB, they should contact Claus Birkner, Gneisenaustr. 1B, W 5800 Hagen, West Germany. **A**

Fact-File

(The numbers in *italic* are fax numbers)

4th Dimension	P.O. Box 4444, Sheffield. (0742-700661)
4mation	Linden Lea, Rock Park, Barnstaple, Devon, EX32 9AQ. (0271-45566)
Abacus Training	29 Okus Grove, Upper Stratton, Swindon, Wilts, SN2 6QA.
Acorn Computers Ltd	Fulbourn Road, Cherry Hinton, Cambridge CB1 4JN. (0223-245200) (210685)
Alpine Software	P.O.Box 25, Portadown, Craigavon, BT63 5UT. (0762-342510)
Atomwide Ltd (p 8)	23 The Greenway, Orpington, Kent, BR5 2AY. (0689-838852) (896088)
Avisoft	11 Meadow Close, Wolvey, Hinckley, LE10 3LW.
Base5 (p4)	PO Box 378, Woking, Surrey GU21 4DF.
Beebug Ltd	117 Hatfield Road, St Albans, Herts, AL1 4JS. (0727-40303) (60263)
Black Sheep Software	P.O.Box 1831, London N15 3NE.
Clares Micro Supplies	98 Middlewich Road, Rudheath, Northwich, Cheshire, CW9 7DA. (0606-48511) (48512)
Colton Software (p14)	149-151 St Neots Road, Hardwick, Cambridge, CB3 7QJ. (0954-211472) (211607)
Computer Concepts (p30/31)	Gaddesden Place, Hemel Hempstead, Herts, HP2 6EX. (0442-63933) (231632)
Cygnus Software	11 Newmarke Street, Leicester, LE1 5SS.
Dabhand Computing	5 Victoria Lane, Whitefield, Manchester, M25 6AL. (061-766-8423) (8425)
EMR Ltd	14 Mount Close, Wickford, Essex, SS11 8HG. (0702-335747)
Human Computer Interface	Ltd 25 City Road, Cambridge CB1 1DP. (0223-314934) (462562)
Longman-Logotron	Dales Brewery, Gwydir Street, Cambridge, CB1 2LJ. (0223-323656) (460208)
MEWsoft	11 Cressy Road, London, NW3 2NB. (071-267-2642) (482-6452)
Micro Studio Ltd	22 Churchgate Street, Soham, Ely, Cambridgeshire.
MJD Software	13 Burnham Way, London, W13 9YE. (081-567-4284)
Oak Solutions (p19)	Cross Park House, Low Green, Rawdon, Leeds, LS19 6HA. (0532-502615) (506868)
Pandora Technology Ltd	9 St Marks Place, London, W11 1NS. (071-221-9653) (9654)
Pineapple Software	39 Brownlea Gardens, Seven Kings, Ilford, Essex, IG3 9NL. (081-599-1476)
Ray Maidstone	421 Sprowston Road, Norwich, NR3 4EH. (0603-407060) (417447)
Serious Statistical Software	Lynwood, Benty Heath Lane, Willaston, South Wirral, L64 1SD. (051-327-4268)
Shenley Software	5 Coombefield Close, New Malden, Surrey, KT3 5QF. (081-949-3235)
Sherston Software	Swan Barton, Sherston, Malmesbury, Wilts. SN16 0LH. (0666-840433) (840048)
Soft Rock Software	124 Marissal Road, Henbury, Bristol, BS10 7NP. (0272-503639 evenings)
Southern Printers	47 Drake Road, Willesborough, Ashford, Kent TN24 0UZ. (0233-633919)
Techsoft UK Ltd (p20)	Old School Lane, Erryrs, Mold, Clwyd, CH7 4DA. (082-43318)
The Advisory Unit	Endymion Road, Hatfield Herts, AL10 8AU. (07072-65443) (273651)
The Serial Port (p22)	Burcott Manor, Wells, Somerset, BA5 1NH. (0243-531194) (531196)
Westbourne Services	34 Bradley Street, Wotton under Edge, Gloucester, GL12 7AR.
Wild Vision	15 Witney Way, Boldon Colliery, Tyne & Wear NE35 9PE. (091-519-1455) (1929)
ZCL Ltd	Unit 1, Ringway Industrial Estate, Eastern Avenue, Lichfield, Staffs. (0543-416626)

Norwich Computer Services 96a Vauxhall Street, Norwich, NR2 2SD. 0603-766592 (-764011)

Archive

Subscription Magazine and Support Group for *Archimedes* Users

Archive Magazine contains:

- News
- Reviews
- Hints and Tips – a major feature
- Articles for Beginners
- The Latest Technical Information
- Program Listings
- Free Small Ad's Section
- HELP – Requested and Offered
- Contact Box – to help you form common interest groups

Bulletin Board: Ring the Archive BBS on 0603-745932, up to 2400/2400, scrolling, 8n1.

- Very Latest News
- Down-load Software
- Mailbox Facilities
- Chat line

Technical Help Service (£10 / year)

A telephone hot-line service for immediate help with your technical problems. Any member can send written enquiries, but for a fast response use the THS!

Members' Discount: Archive offers its members up to 15% off software and hardware from a range of different suppliers when purchased through Norwich Computer Services.

Subscription: 12 issues £17 (UK)
Europe £24, Australia / N.Z. £34,
Elsewhere £31.

Technical Help Service £10

For more details: Ring Adrian or
Alison on 0603-766592.

N.B. All earlier issues have now been re-printed – you may back-date your subscription as far as issue 1 (October 1987) – to take advantage of this huge bank of information.

Archimedes is a trademark of Acorn Computers Ltd.

* Please send copies of *Archive* magazine for ____ years starting from...
Volume ____ Issue ____

* Please enrol me on the Technical Help Service for one year. (£10)

I enclose a cheque for £ _____ payable to "Norwich Computer Services".

Name: _____

Address: _____

Postcode: _____

Norwich Computer Services, 96a Vauxhall Street, Norwich, NR2 2SD

Special four-year subscription starting from volume 1, issue 1 – £52 (UK)